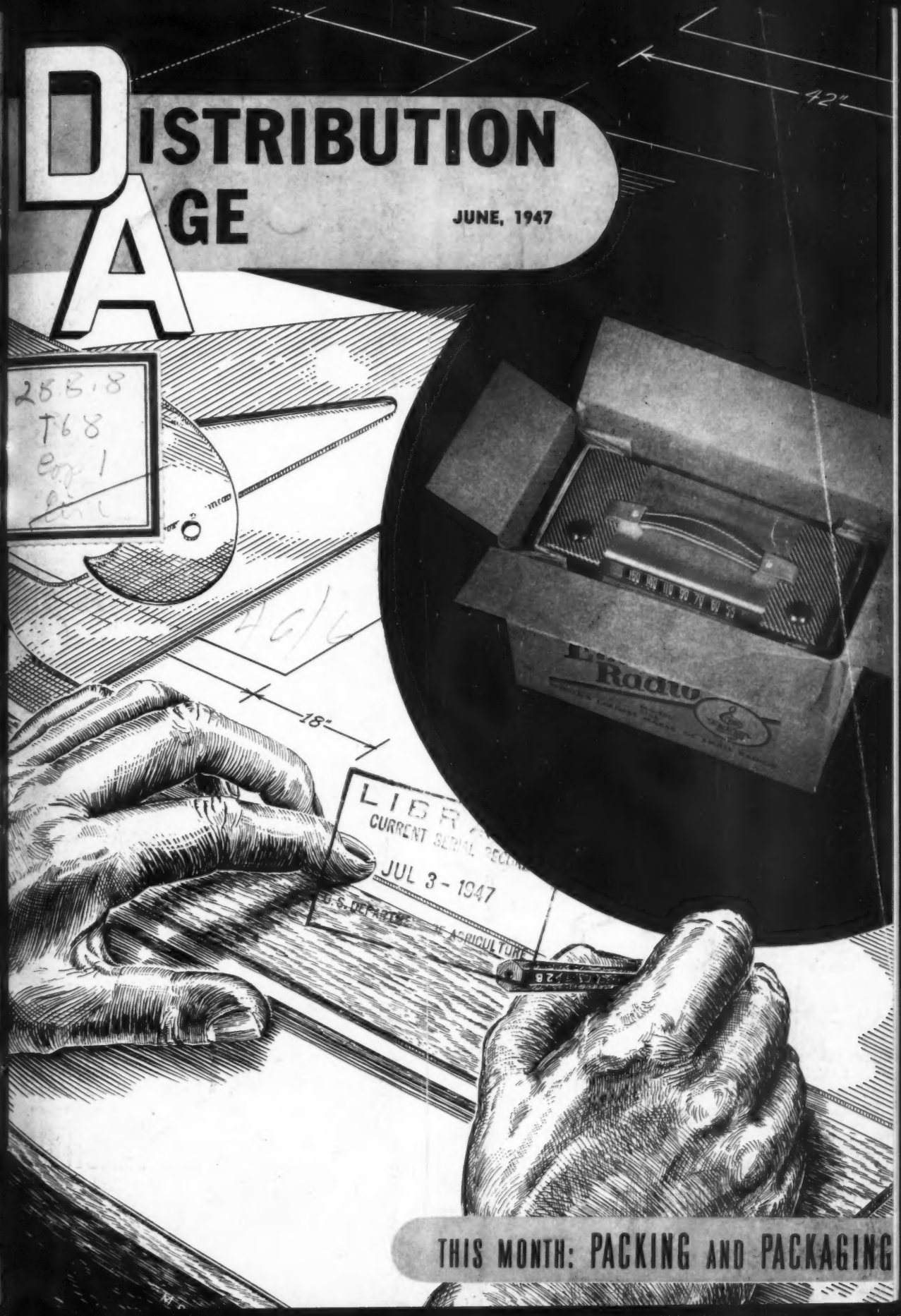
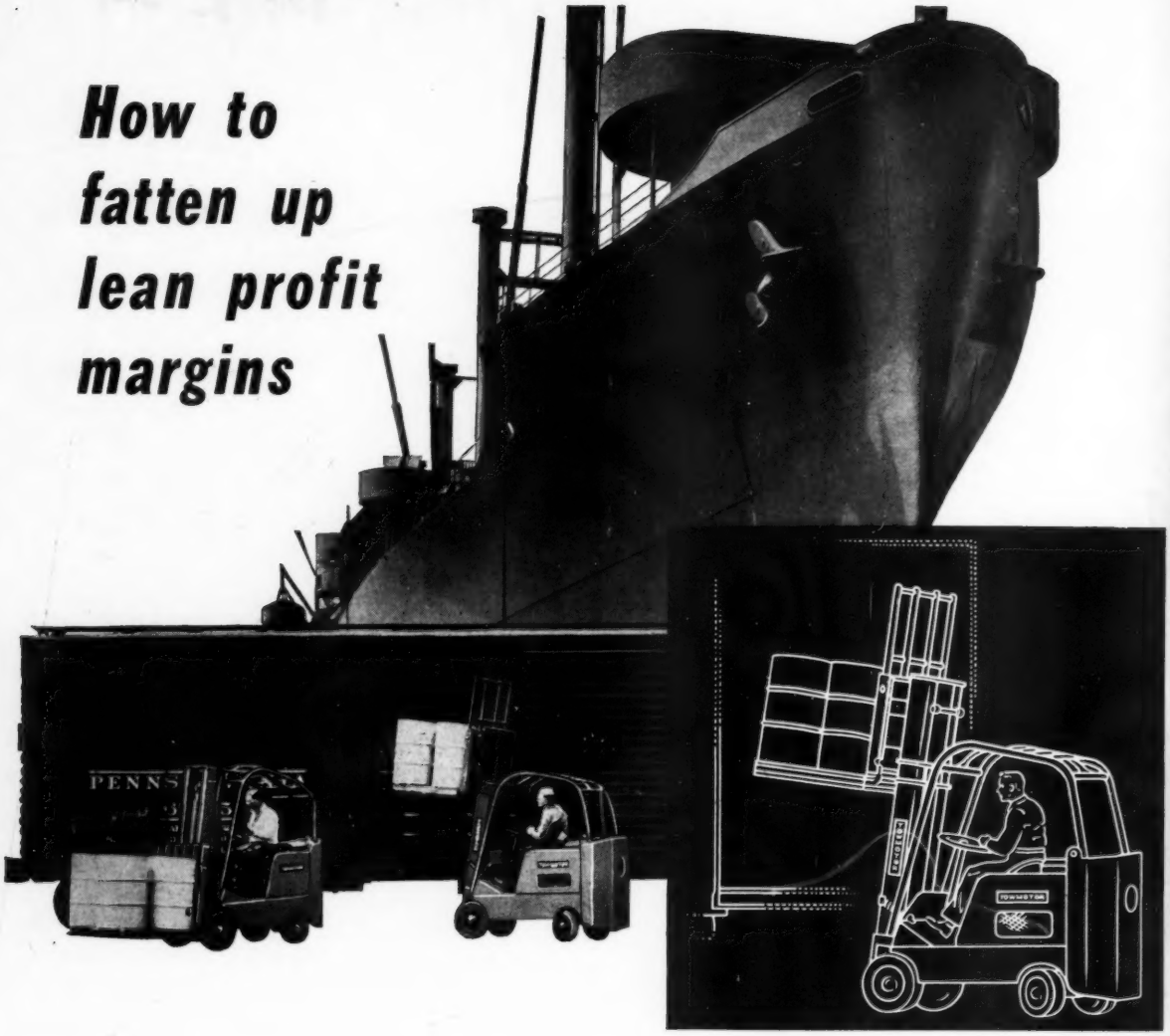
DISTRIBUTION AGE

JUNE, 1947



THIS MONTH: PACKING AND PACKAGING

How to fatten up lean profit margins



In warehousing and stevedoring operations, the margin of profit is governed by the cost of handling . . . and handling costs are determined by the method of handling.

Towmotor Fork Lift Trucks and Accessories, designed for fast, systematic transportation, expedite the storage of all types of commodities, and reduce your handling costs . . . also eliminate the multiple operations required with manual handling methods.

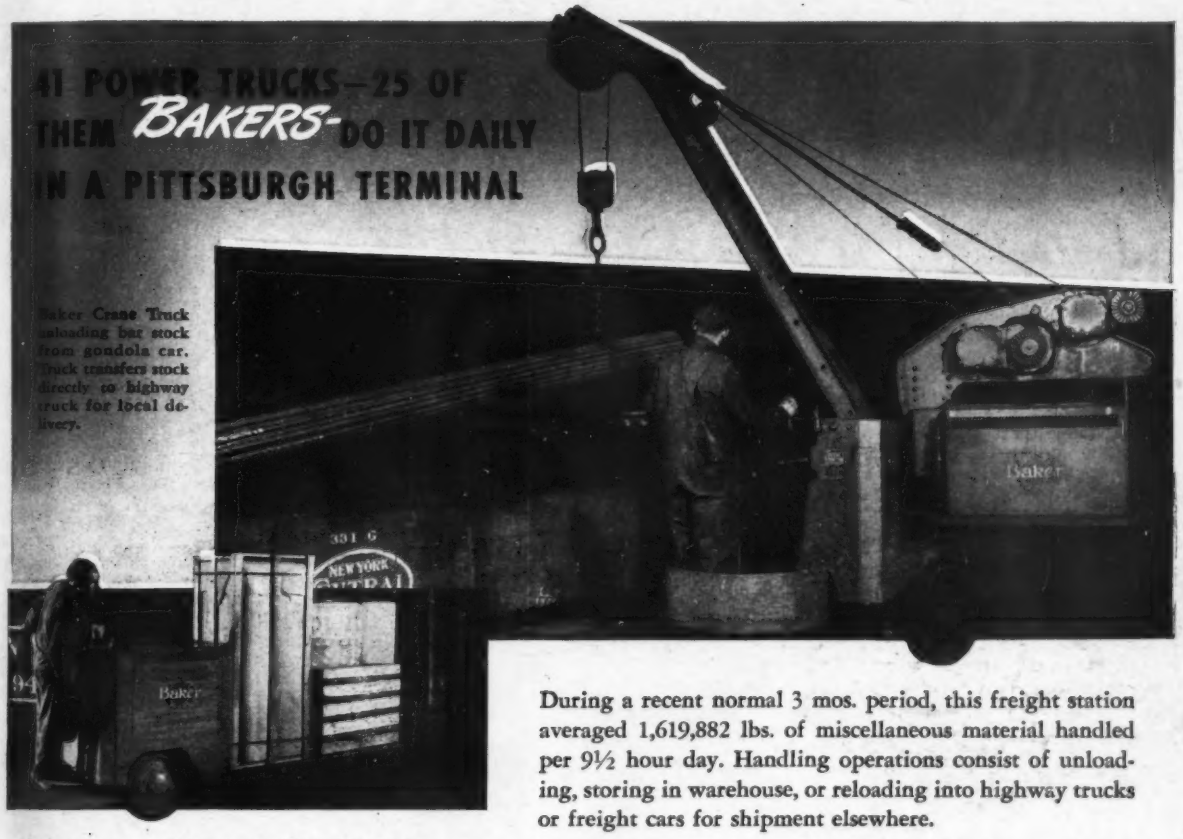
Like to fatten up those lean profit margins? You can . . . a Pocket Catalog will show you how Towmotor can help. Towmotor Corporation, Division 19, 1226 East 152nd Street, Cleveland 10, Ohio.

***SEND FOR SPECIAL BULLETINS DESCRIBING THE* TOWMOTOR** REVOLVING CARRIAGE • SIDE SHIFTER UNLOADER • UPENDER • SCOOP • CRANE ARM • EXTENSION FORKS • EXTENSION BACKREST • RAM • OVERHEAD GUARD

TOWMOTOR **FORK LIFT TRUCKS *and* TRACTORS**

RECEIVING • PROCESSING • STORAGE • DISTRIBUTION

Handling 1,619,882 lbs. of freight is a *BIG JOB!*



Cartons, crates or boxed materials arriving in box cars are unloaded with Baker Platform Trucks and stored or loaded into other vehicles.

This Baker Platform Truck is taking a load of freight into boxcar for shipment to another station.

During a recent normal 3 mos. period, this freight station averaged 1,619,882 lbs. of miscellaneous material handled per 9½ hour day. Handling operations consist of unloading, storing in warehouse, or reloading into highway trucks or freight cars for shipment elsewhere.

It's not only the tonnage that makes this job tough—but the many different sizes and shapes, degrees of fragility and varying points of destination typical of LCL freight handling.

To help accomplish this tremendous task at low cost the terminal uses 41 battery power trucks—with 21 Baker Platform Trucks and 4 Baker Crane Trucks carrying the major part of the load. The company is eminently satisfied with their efficient performance and reports that even though batteries are charged only once daily, there is *sufficient power to run the trucks the full 9½ hours without slowing down.*

If your problem is handling large quantities of miscellaneous material, Baker Trucks can help you solve it.

BAKER INDUSTRIAL TRUCK DIVISION
of The Baker-Raulang Company
2176 West 25th Street • Cleveland, Ohio
In Canada: Railway and Power Engineering Corporation, Ltd.

DISTRIBUTION AGE

The Magazine That Integrates All Phases Of Distribution

100 E. 42nd St., New York 17

THIS MONTH'S COVER

spotlights PACKAGING—a vital link in the distributive chain.

Subscription Rates: U. S., $5.00 per year; Canada, $6.50 per year; Foreign Countries, $6.00 per year. Single Copies, 50c. each.

Acceptance under the Act of June 5, 1934 at Harrisburg, Pennsylvania, authorized May 28, 1946

VOL. 46, NO. 6 **JUNE, 1947**

Special Features

Departments

STATEMENT OF POLICY . . . Our policy is based on the premise that distribution embraces all activities incident to the movement of goods in commerce. If distribution is to be made more efficient and economical, we believe business management must consider more than sales, because more than sales are involved. Marketing, while vital, is one phase only of distribution; seven other practical activities not only are necessary but condition marketing costs. Most commodities require handling, packing, transportation, warehousing, financing, insurance, and service and maintenance of one kind or another before, during or after marketing. We regard all of those activities as essential parts of distribution. Hence, the policy of DISTRIBUTION AGE is to give its readers sound ideas and factual information on methods and practices that will help them to improve and simplify their operations and to standardize and reduce their costs in all phases of distribution.

A NEW, ALL-STEEL, ALL-PURPOSE FLOOR

Nailable Steel Flooring increases car supply—without new cars . . . cuts operating and maintenance costs

Here, at last, is a truly versatile, all-purpose floor. Because it's *steel* it can haul rough, heavy freight. Because it's *nailable* it can carry finished freight which must be blocked in place. And because it's *tight* it can handle fine freight, such as sand, grain and gravel. Gondolas equipped with Nailable Steel Floors can haul *all* types of freight loaded in open-top cars. Today two types of gondolas must be maintained—steel-floored for rough freight, and wood-floored for finished freight. Nailable Steel Flooring provides an all-purpose car that can increase car supply *without* new cars.

Made of N-A-X HIGH-TENSILE *for Long Life*

Nailable Steel Floor channels are formed eight inches wide from N-A-X HIGH-TENSILE, a low-alloy steel far superior to ordinary carbon steels in strength, toughness, corrosion- and abrasion-resistance. Designed to last the life of the car, Nailable Steel Flooring saves floor repair and replacement costs, cuts car time out of service.

Remains Flat After Impact-Loading

The stiffening effect of the channel flanges every eight inches prevents serious dishing of Nailable Steel Flooring. Even after impacts from magnets and buckets or heavy materials dropped from chutes and conveyors, it remains generally flat throughout its length and provides a good surface for skidded loads. In boxcars as well as gondolas, the strength and impact-toughness of Nailable Steel Flooring pay off. Tests prove that it will easily support any size lift truck that can be used in boxcars.

Less Damage to Loads in Transit

The nailing grooves between channels grip nails with a holding force four times that of wood. Blocked more securely, loads run less risk of damage in transit. Sacks and light wrappings cannot be ripped by splinters. Neither the steel nor the plastic filler will absorb spilled liquids which might be passed on to subsequent ladings.

Easier Cleaning and Unloading

Nailable Steel Floors present a smooth surface, with no sharp edges or projections to catch shovels, no nail holes to collect dirt. Cleaning and unloading are simplified. Clamshell buckets cannot rip up the floor.

Long-Range Dollar Savings

The combination of advantages of Nailable Steel Flooring adds up to money saved in operating, damage-claim and maintenance costs. Find out how quickly and easily you can put Nailable Steel Flooring into use. Write us for descriptive booklet.

See car equipped with Nailable Steel Flooring at R. S. M. A. Convention, Atlantic City, June 23-28

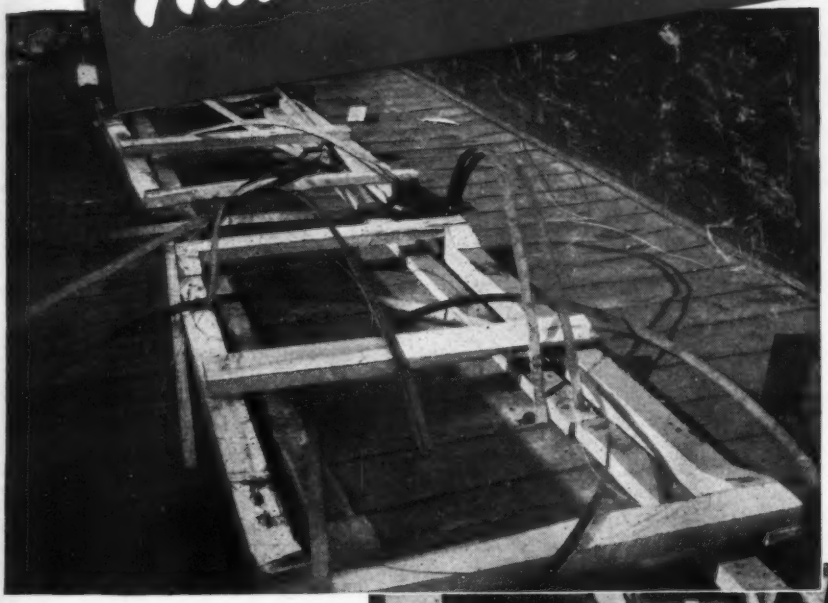
NAILABLE STEEL FLOORING

A GREAT LAKES STEEL PRODUCT

GREAT LAKES

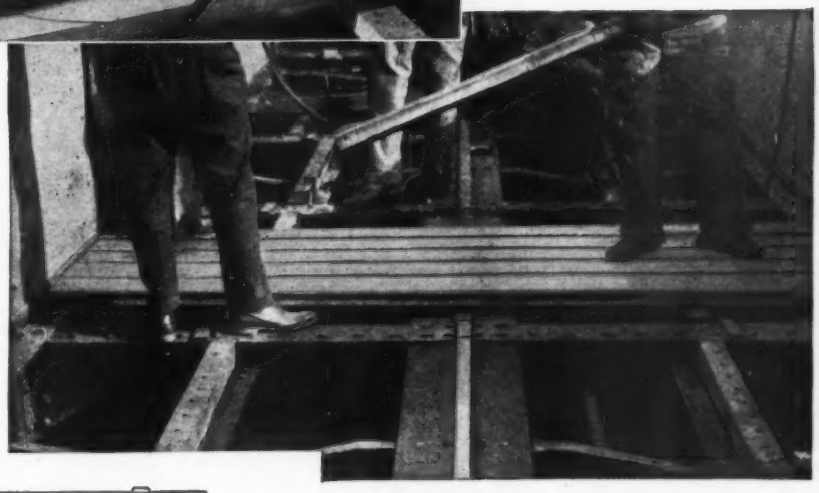
for BOXCARS and GONDOLAS

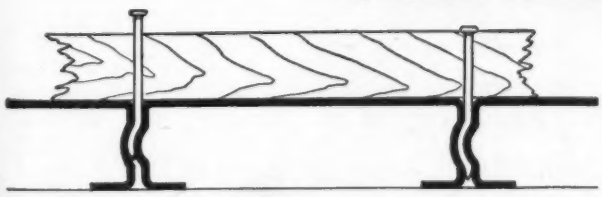
Nailable Steel Flooring



Nailable Steel Flooring in gondola car, showing guide strips secured to floor and "floating" skids from which load of coil steel has been removed. After heavy steel mill service, this floor has retained flat contour necessary for skidded loads.

Here Nailable Steel Flooring is being applied to a gondola car to replace the old oak planking. No alteration of the underframe is required. Channels are simply welded to the existing underframe. In new construction intermediate longitudinal zee members can be eliminated or reduced in number because of the superior strength of the steel floor.





Cross-section of the Nailable Steel Floor. Nailing grooves are filled with a stiff plastic material that will receive nails for blocking and that seals itself when the nails are withdrawn. A tight floor suitable for all types of lading is maintained.

STEEL CORPORATION

STEEL FLOOR DIVISION • DETROIT 18, MICHIGAN

UNIT OF NATIONAL STEEL CORPORATION

THESE INSERTS STAY PUT

... which is one more reason why Mack trucks click off extra thousands of trouble-free miles.

They're Mack Permafit exhaust valve seat inserts. They're faced with Stellite and copper plated. They have exceptional depth and are shrink-fitted into their pockets. Most important of all -- they're made of Mack's exclusive Niferrite alloy.

This secret alloy has the unique property of retaining a permanently firm fit within the pocket regardless of temperature variations between the insert and cylinder block. Thus, distorted and loose valve seat inserts are prevented.

To Mack owners this means lower maintenance costs and more profitable mileage. Inserts have unequalled resistance to wear. Valve life is prolonged. There's less need for grinding. Engines maintain peak performance longer -- stay more economical longer.

This exclusive Mack alloy is a good example of the extra something that goes into every part of a Mack truck. You get more work out of Macks because we put more work into them.

Mack since 1900, America's hardest-working truck

Mack Trucks, Inc., Empire State Building, New York 1, New York.
Factories at Allentown, Pa.; Plainfield, N. J.;
New Brunswick, N. J.; Long Island City, N. Y. Factory
branches and dealers in all principal cities for service
and parts. In Canada, Mack Trucks of Canada, Ltd.

Trucks for every purpose

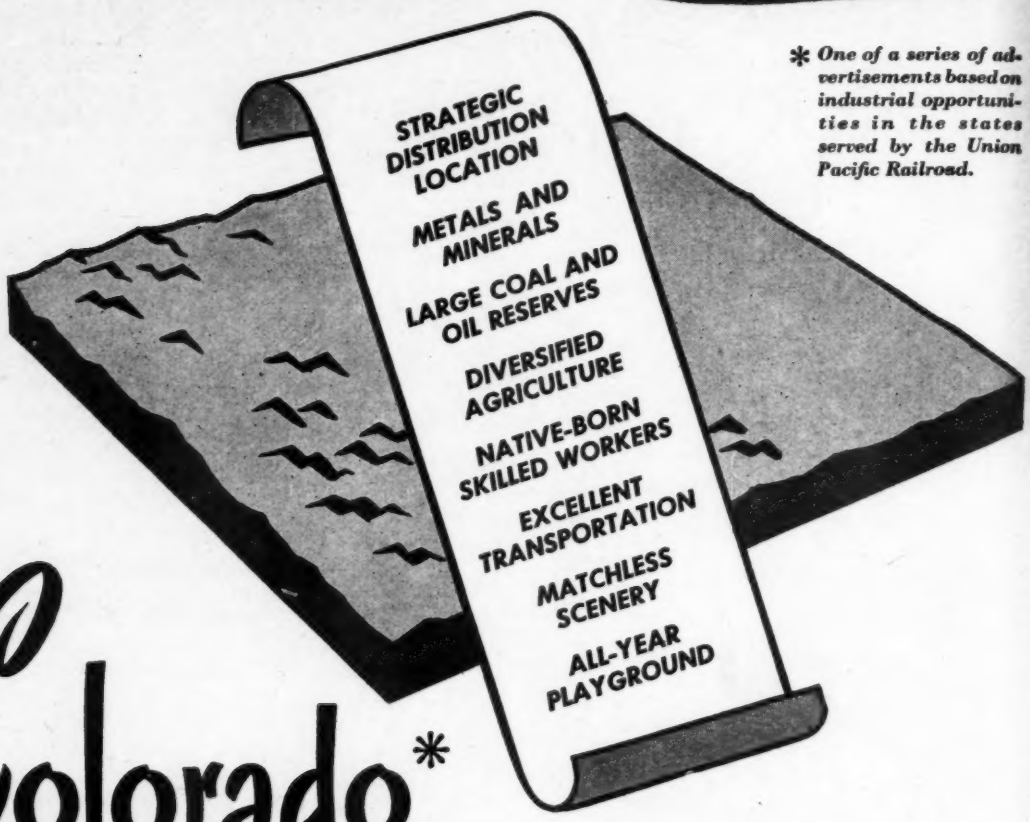
Allentown, Pa., is home port for this **far-ranging** Mack serving **Diehl Storage Co.** Like numerous other long-distance movers this company backs up its "Coast to Coast Service" with dependable Mack equipment.

JF142-54

UNION PACIFIC

TREASURE MAP OF INDUSTRY

* *One of a series of advertisements based on industrial opportunities in the states served by the Union Pacific Railroad.*



Colorado*

Colorado offers industry many desirable sites for manufacture, distribution, warehousing, and other purposes. It is strategically located for national distribution.

Diversified agricultural products are of high quality due to favorable climate and soil.

More than 250 useful metallic and non-metallic minerals and compounds have been found, including precious uranium. Timber, oil and coal are practically unlimited.

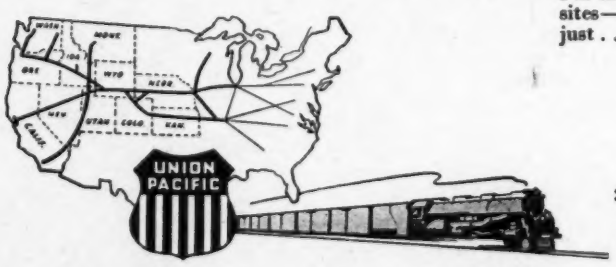
Native-born skilled labor, and a healthful climate resulting in fewer "time-outs" assure economical production.

Colorado provides sound state economy, modern educational and cultural facilities.

Thousands of vacationists enjoy its mountainous splendor, cool summer breezes and winter sports.

Union Pacific provides Colorado with unexcelled freight and passenger transportation. Every night, over night Streamliner service between Denver-Chicago . . . Denver-St. Louis.

For assistance in securing industrial and commercial sites—and for all-weather, dependable rail service, just . . .



be Specific – say "Union Pacific"

* *Address Industrial Department, Union Pacific Railroad, Omaha 2, Nebraska, for information regarding industrial sites.*

UNION PACIFIC RAILROAD

THE STRATEGIC MIDDLE ROUTE

"Certainly

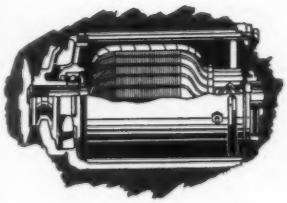
FORD TRUCKS LAST LONGER!"

"That's why we operate 207 of them!"—says C. R. Littlepage, Supt. of Transportation, Houston Oil Field Material Co., Houston, Texas.

Two 1939 Ford Trucks owned by HOMCO that prove the point: (Above) Driver Joe Zachary and Pickup, mileage 207,316; (Below) Driver H. O. Carpenter and Pickup, mileage 228,398. Supt. Littlepage adds: "Our Ford Trucks deliver trouble-free miles at minimum cost!"

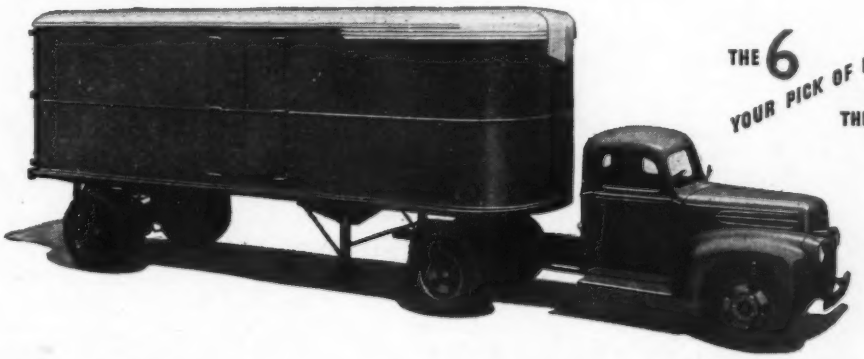
One BIG Reason—

FORD ELECTRICAL UNITS STAND UP!



The fame of Ford Trucks for swift, sure starting and all-weather reliability rests solidly on Ford design and Ford quality . . . in particular, the Ford Electrical System. More than 12 million Ford-designed starter motors and generators have been built in Ford shops. Repeated tests for electrical efficiency consistently prove these fine, Ford-built units to be outstanding. Long, trouble-free generator service is assured by such long-life features as pre-lubricated, sealed ball bearings on armature shafts, and by bushings wick-lubricated from a reservoir with an overflow drain, which prevents surplus oil from reaching commutator. Ford starter motors are pre-lubricated, requiring no oiling whatever. Ford wiring and generous battery and generator capacity adhere strictly to the highest standards of the industry. The simplicity and high efficiency of the Ford starting system circuit, too, have much to do with Ford's faithful starting performance.

Ford



THE 6 YOUR PICK OF POWER THE V-8

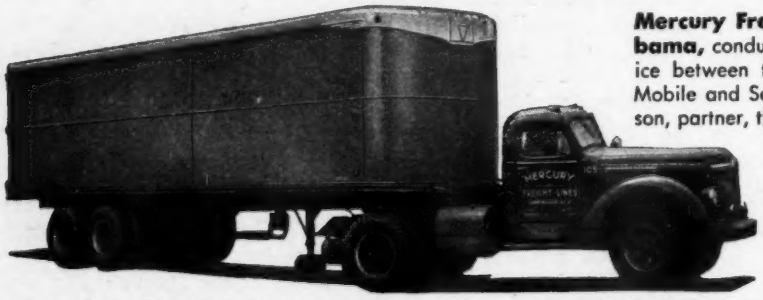
The Ford heavy duty chassis is a natural for tractor-semi-trailer work because of inherent engineering advantages. Your Ford Dealer can provide the complete unit to meet your needs. Van semi-trailer shown is by Highway Trailer Co., Edgerton, Wisconsin.

Only Ford Brings You All These Long-Life Features: Your choice of engines, V-8 or SIX —each with new Flightlight oil-saving 4-ring pistons and precision bearings · true truck frames in all models, with siderails *doubled* in heavy duty units · rear axle shafts free of weight-load, ¾-floating in half-ton units, full-floating in all others · big, easy-action brakes with non-warping, score-resistant cast drum surfaces—in all, *more than fifty* such endurance engineering features! And more than 100 body-chassis combinations to choose from. See your Ford Dealer now!

MORE FORD TRUCKS IN USE TODAY THAN ANY OTHER MAKE!

Boss-Linco Division of Lincoln Storage & Cartage Co., Buffalo, is the "over-the-road" division operating as a common carrier of general commodities in the states of New York and Pennsylvania, within 200 miles of Buffalo. Mr. Charles J. Palisano, partner, says "Trailmobile's tandem is most satisfactory . . . Trailmobiles have proved far stronger, more economical than other trailers for common carrier service."

Denver Chicago Trucking Co., Inc., Denver, covering 22 states, is a transcontinental carrier that traveled 12,830,648 miles during the last fiscal year. They use 80 Trailmobiles. The tandem is "very good, very well constructed," states Mr. Felix Cohen, Vice-President. He is also convinced Trailmobiles are "the easiest-pulling trailers, save gasoline, tires."



Mercury Freight Lines, Birmingham, Alabama, conducts an efficient common carrier service between the Alabama cities of Birmingham, Mobile and Selma. According to Mr. J. H. Anderson, partner, they consider all of their Trailmobiles to be "outstanding trailers." He feels that the newly developed, simplified tandem is an important reason for Trailmobile superiority. Other advantages: "excellent" service and lower operating cost.

For Sensational New Developments Like The "Rocking-Beam" Tandem . . .

The Trend is to TRAILMOBILE

Another Trailmobile first! Trailmobile has built a new tandem employing entirely new principles. The secret? Two simple "rocking-beams" equalize loads on both axles, reduce number of moving tandem parts from twelve to only two. All parts are standard . . . interchangeable . . . available "everywhere." This simplified Trailmobile tandem sharply decreases lubrication and upkeep costs and permits heavier payloads through the use of a really effective, practical tandem arrangement.

Just look at a new Trailmobile. You'll see a basically improved undercarriage; new structural advances like the "diamond" construction of the sides; a 50% more efficient prop . . . plus other trailer improvements which mean lower upkeep and maintenance costs. No wonder hundreds of carriers like those quoted above are following the nation-wide TREND TO TRAILMOBILE.

A coast-to-coast network of 73 Customer Service Centers is ready and willing to demonstrate to you in detail all the many advantages of Trailmobile performance. There's a Center near you. Why not call on a friendly Trailmobile Branch today?

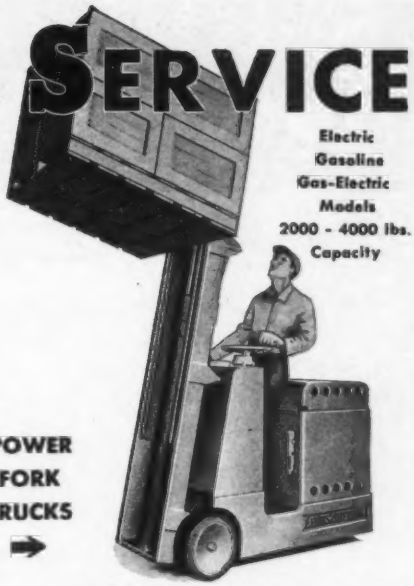
THE TRAILMOBILE COMPANY • CINCINNATI 9, OHIO

L-S for LONG SERVICE

There's no substitute for 32 years' experience . . .

L-S Power Fork Trucks, Power JackLifts as well as L-S Hydraulic and Mechanical Hand-Lift Trucks are TOPS in the Materials Handling Field. Rugged, compact, efficient, economical, these trucks can really take it . . . handle your heavy loads day after day . . . Multiply Your Manpower . . . Increase your storage space.

Buy L-S for Long Service and Dependability!



Electric
Gasoline
Gas-Electric
Models
2000 - 4000 lbs.
Capacity

POWER FORK TRUCKS ➡

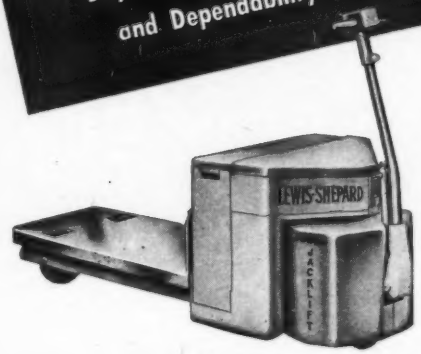
L-S Fork Trucks "Pivot on a Platter." They turn into narrow aisles and right-angle pile in one single quarter turn. They increase your storage space. Save Time, Save Money!

Hydraulic FootLift
5000 lbs. cap.

Hand Operated

⬆ **JACKLIFTS and HYDRAULICS**

These Trucks are compact, sturdy and built for long service. Jacklifts in 2500 to 6000 lbs. capacity with 3" lift. Hydraulics in HandLift or FootLift Models, 3500 to 15,000 lbs. capacity with 4" lift or higher.



⬅ **POWER JACKLIFT**

**100% Electric Operation
100% Electric Drive —
100% Electric Lift —
100% Electric Brake with Handle Vertical and in all Positions. Skid Platform Models in 4000 and 6000 lbs. capacity. Pallet Models in 4000 lbs. capacity.**

MULTIPLY MANPOWER · LEWIS-SHEPARD

LEWIS-SHEPARD PRODUCTS INC.

321 WALNUT ST., WATERTOWN 72, MASS.

REPRESENTATIVES IN PRINCIPAL CITIES — CONSULT YOUR PHONE DIRECTORY

SINGLELIFTS · HYDRAULIC HANDLIFT TRUCKS · JACKLIFTS · SKIDS · FLOOR TRUCKS · PALLET TRUCKS · STACKERS · PALLET STACKERS
PRODUCTION LIFTERS · CRANES · RACKS · ELECTRIC, GAS-ELECTRIC AND GASOLINE POWERED FORK TRUCKS · POWER JACKLIFTS

BUILT FOR *Your* BUSINESS

Whatever your hauling requirements, GMC's wide range of light, medium and heavy duty models offers the exact kind of trucks you need for your job. Postwar tractors, pick-ups, stakes and platforms are the best GMCs ever built. They have engines of the same basic design as the famous GMC-built "Army Workhorse." They boast heavier frames and axles, sturdier clutches and transmissions and bigger brakes, plus such prewar GMC advantages as Turbo-Top Pistons and Recirculating Ball-Bearing Steering. GMCs are all-truck built. *They're built for your business.*

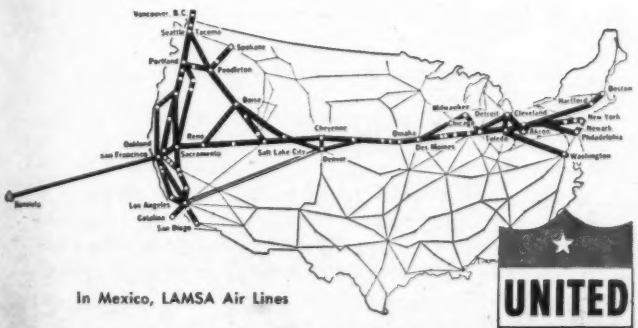
GMC TRUCKS

The Truck of Value

GASOLINE • DIESEL

GMC TRUCK & COACH DIVISION • GENERAL MOTORS

can your products go by UNITED AIR FREIGHT?



In Mexico, LAMSA Air Lines

AIR FREIGHT SERVICE

Pickup and Delivery in all Major Cities

UNITED AIR LINES

More and more manufacturers, distributors and retailers are turning to United Air Freight to speed their shipments, reduce excessive inventories—reduce warehousing costs. There's practically no limit to the types of cargo being carried, economically, by air.

United Air Freight provides speedy, low-cost movement of cargo between the 70 cities along the Main Line Airway. Connecting service by air and coordinated truck carriers to all important cities in the United States. Connections at 7 United intercontinental terminals speed air freight "everywhere."

Swift, 4-engine Cargoliners—18,000 pounds capacity—fly between major markets in a matter of hours. Other Cargoliners reach intermediate markets. In addition, *every Mainliner passenger plane carries United Air Freight.*

For all information on air transportation call your local United sales representative or write United Air Lines, Air Cargo Division, 5959 S. Cicero Ave., Chicago 38, Ill.

DOUBLE Your Loads this Simple Way!

COUPLE YOUR SMALL TRUCK TO A

FRUEHAUF FLYER

AND HAUL AS MUCH AS

8 TONS!

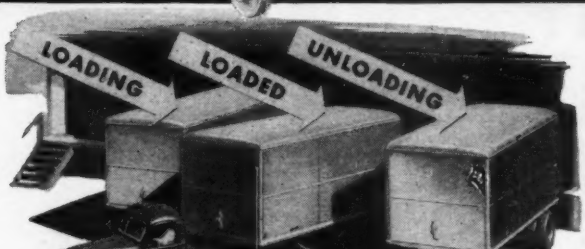
• ***Only with Trailers*** can you increase the load-hauling ability of your trucks.

It's a fundamental fact that any truck can *pull* much more than it is designed to *carry*. Thus, when you couple the Fruehauf "Flyer" to a light delivery truck, loads can be doubled with little increase in operating expense per mile. This Trailer-method cuts delivery costs as much as 60%.

Further—Fruehauf "Flyers" get around fast in busy city traffic. The truck-and-trailer unit is "hinged in the middle" and turns in the same short radius as the small truck which pulls it.

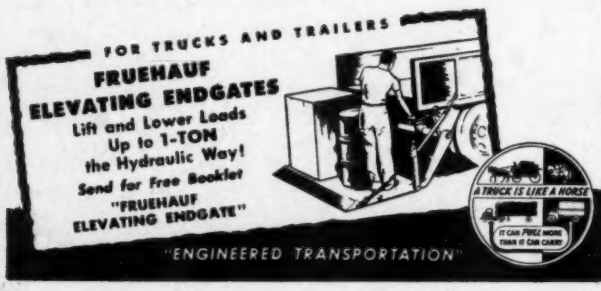
Deliveries climb with a "Flyer" on the job—no need to add another truck to move more goods and increase congestion on city streets.

Compare your delivery set-up with the low-cost Trailer method. Let a Fruehauf representative give you the complete "Flyer" story!



ONE TRUCK HANDLES SEVERAL TRAILERS

Delivery efficiency can be stepped up still further by the use of Trailers in "Shuttle" operation. This means that one truck can handle several Trailers. One Trailer is left at the loading point, another at the unloading point, while the truck is enroute with a third. In this way your truck is never idle—customer service is improved—and hauling costs are lowered.



World's Largest Builders of Truck-Trailers

FRUEHAUF TRAILER CO. • DETROIT 32

10 Factories — 66 Factory Service Branches

FRUEHAUF *Trailers*

EDITORIAL

Packing and Packaging

PACKING and packaging are essential parts of distribution since both vitally affect not only sales but the methods and costs of handling and transportation. During the past few years, industrial management has come to realize that product design must take packing and packaging into consideration: packaging because it is primarily concerned with marketing and packing because it is concerned with product protection during the flow of merchandise through all of the physical stages of distribution. Packing and packaging as even a cursory examination of articles in this issue will disclose, are not isolated or unrelated activities but together form an essential link in the distributive chain.

Faulty packing is a serious drain on distribution costs. In 1946, loss and damage claims against the railroads and highway carriers reached the unprecedented total of 125 million dollars. Despite the many other plausible reasons advanced for this mounting spiral, overloading of carriers, the necessity of expediting handling in order to release carriers for reloading, the shortage in experienced labor, the inaccessibility of needed packing materials, the fact remains that faulty packing is a major cause.

In the export field, also, enormous losses are being incurred which are directly attributable to faulty packing. These losses, which entail a real economic loss on both the shipper and the receiver and jeopardize good will, are frequently so unnecessary as to reflect on the intelligence of shippers. For example, steamship companies report that a major cause of damage to merchandise in export is the continued use of fluted and corrugated fibreboard containers which, however desirable they may be in domestic shipping, are sometimes unsuitable for overseas transportation because of moisture absorption which so seriously weakens the rigidity and stacking quality of packages that they cannot be stored properly and as a result goods are lost and damage claims mount. Obviously there is need for standardization in the field of export packing and need for the policing of these standards by the carriers in some reasonable, practical manner.

Programs looking to the reduction of present enormous loss and damage claims have been initiated by the Assn. of American Railroads, the American Trucking Assns., the Railway Express Agency, various airlines, and by individual rail, highway and water carriers. In some instances, the railroads are employing packaging and packing engineers for the purpose of giving shippers the benefit of their experience and "know-how" whenever damage claims or routine inspections of goods in transit bring faulty packing to their attention. Standards covering factors of safety have been developed by some of the carriers; but too often shippers, sometimes for reasons beyond their control, have failed to adopt these or other standards. Well conceived educational programs aimed at "reaching the men who do the packing" also are being undertaken by firms in distribution, shippers' advisory boards, and by various commercial bodies and trade associations. The number of such programs currently being carried forward in the United States probably number well over 1,000.

These well intentioned efforts, admirable and necessary as they are, are failing to effect any substantial change in the overall picture because they are not sufficiently integrated and coordinated, one with the other. In discussing this lack of coordinated effort, R. E. Edwards, general traffic manager, Hassco Hardware & Steel Co., asks us in the May issue of DISTRIBUTION AGE, to image, if we can, one thousand men trying to overhaul a single automobile at the same time without planned coordination.

It is becoming increasingly apparent that unrelated individual effort on the part of shippers and carriers is not sufficient to eliminate this tremendous economic waste. It is a job for industry as a whole.

"If loss and damage claims," as we have previously pointed out in this column, "continue to rise, it may become necessary, because of their effect on distribution costs, to devise legal penalties and assess shippers for inadequate packing and the carriers for accepting freight that does not conform to specified packing standards. When cooperative measures fail, legal restrictions are likely to follow. Business history during the past century is replete with examples."

D. J. Witherspoon

Editor

NEXT MONTH

DA for July will present various ways in which materials handling is, and can be, used as a tool for efficient and economical distribution. Some of these features will include:

●

TRENDS IN MATERIALS HANDLING . . . by Matthew W. Potts and by other staff consultants and experts in industry and distribution who will discuss the efficient mechanical handling of raw materials and finished products . . . Better handling can expedite packing; speed up transportation; minimize insurance costs; keep down storage charges and step-up marketing. The July DISTRIBUTION AGE will feature many notable contributions to this vital subject.

●

BRITAIN'S NATIONALIZATION BILL . . . by G. Lloyd Wilson, Professor of Transportation and Public Utilities, University of Pennsylvania. There are many forward-looking industrialists and economists in this country who see in the facts and implications of current economic trends a serious threat to free enterprise in the transportation field. Dr. Wilson's able article parallels the case of Britain with that of the United States.

●

DESIGN FOR BETTER HANDLING . . . by Henry D. Cleveland, chairman of the board, John S. Emery, Co., Inc., who will discuss ship design in relation to more efficient cargo handling. This is another contribution to Mr. Cleveland's 10-year plan for the overall improvement of our transportation system.

●

BLUEPRINT FOR ECONOMY . . . by W. G. Leathers, National Paper Trade Assn. A scientific, but simple pattern for efficient handling of paper and similar products. The plan includes consideration of such factors as warehouse layout, equipment, and effective use of manpower.

●

GLUED UNIT LOADS . . . A progress report direct from the laboratories of a leading adhesives manufacturer. Since the Navy reported during the latter part of the war, vast economies with glued unit loads this promising method of shipment has been adapted to commercial use.

LETTERS to the *Editor*

Handling Evolution

Sir:

The one overall and outstanding development American industrial and commercial interests must begin to appreciate is the evolution in handling. We have been preaching the advantages of mechanized handling of machine-size rather than manual-size unit loads since 1915.

Manpower has ever increased in cost over the years. The cost of common labor used for handling has outstripped all others. Today it is necessary to employ, thanks to the so-called social gains, semi-skilled labor to perform the most menial of operations. As a result, no one wants the job at any price. The cost of handling labor, on the other hand, is so high that management cannot afford to buy it even when it is available. "Beefsteak" power as compared with kilowatt power in today's economy has not a chance unless we wish to restrict markets.

Handling primarily is a waste and is one of the remaining frontiers to be attacked if not eliminated. In world trade we have another situation. If we are to man our ships with labor that is several times in cost of that working under foreign registry there is one real solution. Our ports must be the best equipped in the world. We should be situated to load and unload ships in less time than at any other known spots. Ship subsidy money could well be spent at the ports. A ship only earns when moving and not as a warehouse at the pier. At the best, industrial capital turnover is slower in foreign trade. The midwest is going to protect itself by avoiding the delays and expenses at ports charged against goods destined for overseas delivery. Goods cannot be forced to pass through restricted bottlenecks already overloaded with domestic traffic. Foreign competition will not permit cost plus practices. Our immediate concern is preparation to avoid or reduce lost motion in distribution.—**C. B. Cook, vice president, The Elwell-Parker Electric Co., Cleveland, O.**

° ° °

Barometers

Sir:

I was particularly interested in reading the editorial comment "Warehousing as a Business Barometer" which appeared in the 1947 *Distribution and Warehousing Directory.*

Some of the points brought out in this comment are things that have occurred to me off and on as to why public warehousing could be considered a good barometer of general business conditions.

I think this article is outstanding and if it were possible to have reprints distributed in a manner in which you have done in the past, it would be a good public relations gesture for the industry.

Incidentally, if you should have any reprints made we would be interested in receiving about 100.—**R. C. Greeley, president, The Greeley-General Warehouse Co., Cleveland, O.**

° ° °

Spiral Chutes

Sir:

The writer has had the opportunity of hearing Matthew W. Potts discourse on materials handling equipment many times. The last occasion was at Babson Park, Mass., at the naval school in 1943. Knowing how completely acquainted he is with all materials handling problems, I would like to ask him for some information.

In my opinion, our business could use some spiral chutes. This statement is made subject, of course, to a chute manufacturer's inspection.

It would be appreciated if Mr. Potts would turn my request over to a manufacturer of the above type of handling equipment. It would be further appreciated if the manufacturer would have a representative call on the writer. Please accept my sincere thanks for your cooperation.—**O. E. Boettcher, house superintendent, The Tracey-Wells Co., Cleveland, O.**

Editor's Note: Mr. Potts has taken care of Mr. Boettcher's request.

° ° °

Warehousing

Sir:

The Shipper's Conference of Greater New York has come to the conclusion that warehousing is a necessary function in transportation and has just created a standing rate committee known as Public Warehousing Committee of which the writer is chairman.

The writer has very little knowledge with regard to warehousing in general and any information that you may have on file with regard to public warehousing will be most appreciated if it is passed on to him.—**S. C. Billig, traffic manager, The Weiss & Klau Co., New York City.**

Editor's Note: The information requested has been forwarded.

For peak quality, HIGHWAY TRAILERS

ALL OVER America, Highway Trailers are piling up profits and holding down costs for owners. Their ton-mile rate is low. Their honest engineering means freedom from trouble, makes for uninterrupted schedules. Extra years of service built into every Highway Trailer mean slow depreciation. Easy handling and freedom from weave and sway rate Highways high among operators.

You'll find exactly what you want in the complete Highway Trailer line. Every vehicle is the product of over a quarter-century of successful trailer building, whether you choose a "Clipper" or "Freightmaster," a livestock, grain, tank, platform-type, or the famous Highway Warehouseman's Van. We control quality, because Highway Trailers are manufactured in our own modern factories, which include our own foundry, forge, and machine shops.

Write today for information on the type of Highway Trailer that fits your business. Let us give you detailed facts and figures to show you why it pays to let your next trailers be Highways.

HIGHWAY TRAILER COMPANY

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Commercial Truck Trailers • Earth Boring Machines
Winches and other Public Utility Equipment

1917–1947
HIGHWAY TRAILERS
30th Anniversary

HIGHWAY AMERICA'S QUALITY **TRAILERS**

YOU CAN STACK A TON OF BEEF...

for less than the price of a "FRANK"

. . . WHEN YOU "MOVE IT WITH A YALE"

Yes, there's real economy in moving and high-stacking goods with Yale-power instead of man-power. This is fact because man muscles don't have the "horsepower" to handle the tonnage that a Yale Truck can lift, shift and stack in a single load.

Wasteful piece-by-piece rehandling is eliminated, time and effort are saved, and storage to the ceiling makes "overhead" a paying proposition for you.

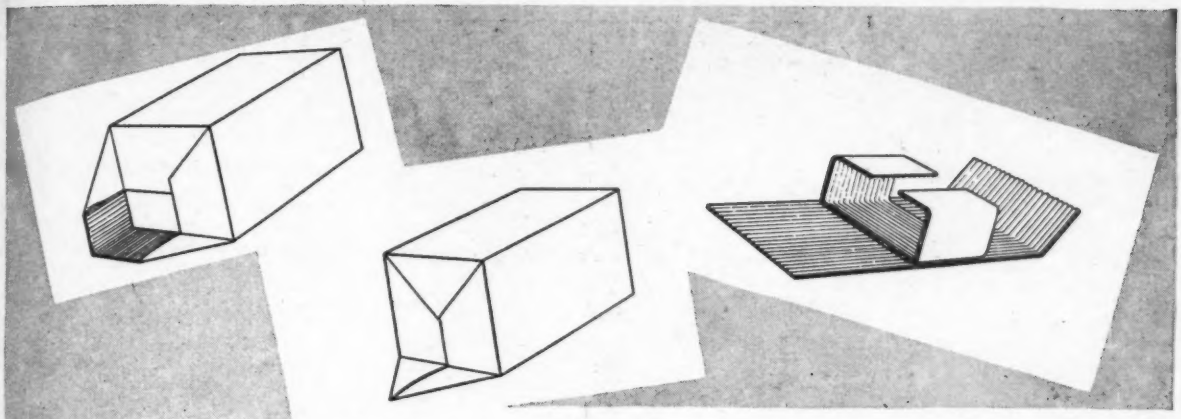
Learn all about how Yale Material Handling Machinery can put new speed, efficiency and safety into *your* handling operations. Learn what handling more tonnage per man-hour can mean in widening your operating profit and narrowing your costs. Phone or write to our nearby representative or get in touch with us direct. The Yale & Towne Manufacturing Co., 4530 Tacony Street, Philadelphia 24, Pa.

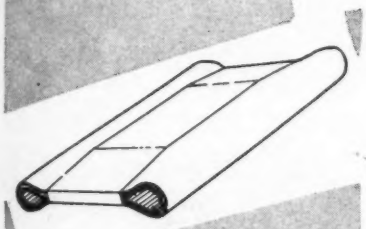
MATERIAL HANDLING MACHINERY

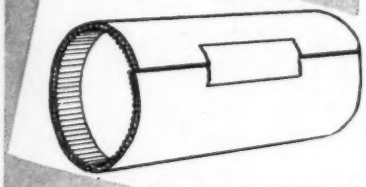
CUTS HANDLING COSTS . . . SAVES TIME . . . SAVES EFFORT . . . PROMOTES SAFETY

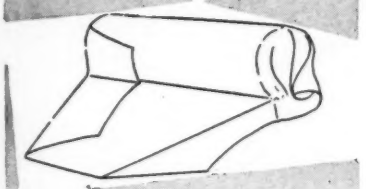
YALE

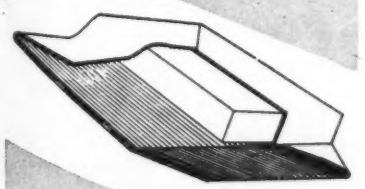
KRON INDUSTRIAL SCALES • HOISTS—HAND AND ELECTRIC • TRUCKS—HAND LIFT AND ELECTRIC

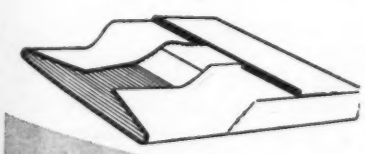












Twelve "Skins" of Packing

By CHARLES L. SAPERSTEIN

1. PROTECTION OF GOODS: Any step necessary to prevent deterioration of merchandise in transit or storage. Includes oiling; rust prevention, dusting, spraying, cleaning, finger-print removal, etc.

2. WRAPPING. All steps involved in wrapping, cushioning or protecting the unit of cargo itself. Also serves to retain intact any preservative applied.

3. UNIT PACKAGING. In addition to unit wrapping, many articles require unit labelling and identification.

4. CONSUMER PACKAGE. The package, box or unit sold to the consumer.

5. CONSUMER PACKAGE—OUTER WRAP. Takes many forms—paper wrap; cellophane wrap; holiday or gift wrap. Often serves to preserve freshness; prevent soiling. May aid in stacking, for example, when the consumer package is a bottle.

6. COUNTER DISPLAY UNIT. In addition to their value in merchandising, counter display compartments help to give greater strength to the shipping units.

7. WHOLESALE UNIT. Conventional shipping carton or wooden case or holding usual quantity of goods convenient for delivery to one retailer.

8. WATERPROOF LINER. May be employed over several wholesale units being packed in one export case or crate, or inside the wholesale unit, inside the retail unit, or around the item of merchandise itself where so-called Method 1-A corrosion control pack is required.

8A. WAX-DIPPING, and other hermetically-sealed closures. May be applied at various points in packaging, depending upon the nature of the goods being made impervious to water, moisture, oil, etc.

9. MASTER SHIPPING BOX. For long distance shipping, export or long time storage, wholesale units, singly or in quantity, are overpacked in a master shipping box or crate. The use of water-proof liner (see No. 8) is advisable.

10. STRAPPING, banding or tying.

11. STENCILLING, marking and identification.

12. SHORING AND BRACING. Neglect or inadequacy of this layer of protection causes more damage than any other single factor in preparation of goods for shipment.

Editor's Note: Maj. Saperstein elaborates on the twelve "skins" of packing in an article on page 56 of this issue.

A package is more than a silent salesman . . . Montgomery Ward believes that a package can be made a star salesman because it can tell exactly the same story every time exactly the way it should be told . . . Fact tags, instruction and care booklets, wall cards, etc., are employed extensively in order to ensure purchaser satisfaction.

Montgomery Ward & Co. spends 40 million dollars annually for packaging the many thousands of products listed in its 1100-page general catalog and distributed through its ten mail order houses and its 650 company-owned retail stores.

Ward's $40,000,000 P

By RANDALL R. HOWARD

Special Correspondent

ONE of the country's biggest and most interesting packaging programs is being carried out by Montgomery Ward & Co., Chicago. This program involves a master plan to improve and unify packaging into family groups wherever possible. The program involves the tens of thousands of products listed in Ward's 1100-page general catalog and distributed through its ten mail order houses and 650 company-owned retail stores. The program includes improved protective packaging as well as surface designing and display values. Packaging activities are under the direction of James G. Witte, manager, merchandise preparation department. This department is a unit of the general merchandise division and Mr. Witte is responsible solely to top merchandise management. The merchandise preparation department includes the three related sections of packaging . . . package engineering, surface design, and merchandise literature. The stated objective of the department is "to increase sales and profits by the presentation of merchandise in packaging that is functionally sound, sales stimulating and economically designed."

Montgomery Ward's packaging policy recognizes the necessity of merchandise reaching the customer in an inviting and usable condition. The importance of packaging to Montgomery Ward is emphasized by the fact that its packaging expenditures, directly

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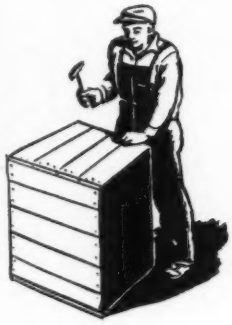
Ward's package surface designs and merchandise literature follow definite, established principles, designed to identify packaged merchandise in family groups . . . In general merchandise quality is designated by an encircling band of color band with the quality stated within the color band. At the top of packaged merchandise is the statement of contents, and below that the quality band; centered on the vertical axis in the visual center is the name of the product, followed by any necessary description. At the bottom is the company signature.



Packaging Program

and indirectly, total 40 million dollars annually.

Mr. Witte stated recently, "Our packages today are not expense items; they constitute an integral part of the merchandise. When you buy a refrigerator, you do not buy that refrigerator for use at the end of the assembly line. You buy it to use in your kitchen and until it is in your kitchen, it is of no value. The container in which the refrigerator travels from the factory to the kitchen is part of the merchandise value.

Ward's packaging program involves not only marketing but materials handling and other physical phases of distribution. It often goes back to the factory production line. It includes recommended engineering; redesign of merchandise units proved by Ward's distribution experience to be especially subject to shipping damage, awkward or difficult to handle, or especially subject to customer usage troubles. This phase includes submission to manufacturers of carefully engineered designs of pre-tested, unit selling packages that will meet the necessary protective and sales stimulating standards which the merchandise preparation department is building into the new Montgomery Ward post-war packaging program.

A dependable check on the performance of Ward's packaging is the claim analysis section of the merchandise preparation department. This section utilizes a card record of all shipping damage reports and claims received by the general traffic department, plus an assembly of customer complaints chargeable directly or indirectly

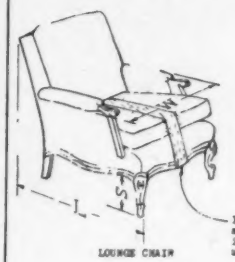
to packaging. The shipping damage claims against packaged goods include information regarding the shipping point, carrier, shipper, final destination, extent of loss or damage, and type of merchandise. These assembled package-failure reports are distributed to the individual package engineers responsible for the particular line of merchandise involved and are also available to the manufacturer. Graphs are then made which show performance trends of packaged merchandise.

Ward's Merchandise Preparation Standards give complete and detailed information as to package dimensions, the materials to be used and the packing procedure. These standards eventually will be used for all of the many thousands of products included in Ward's 1100-page general catalog and distributed through the company's ten mail order houses and the 650 company-owned retail stores.

High professional standards have been established for all personnel, and the standards for a package engineer are especially exacting. In a recent talk before an industrial packaging clinic, Mr. Witte reviewed some of the factors with which he believes a good package engineer should be familiar.

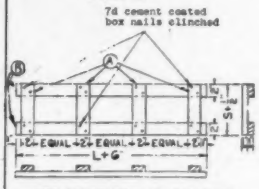
(*Continued on Page* 90)

FIG 1



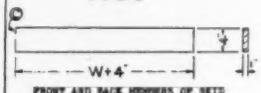
LOUNGE CHAIR

FIG 2



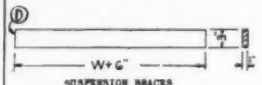
SIDE CONSTRUCTION OF SKID FRAME
2 REQUIRED

FIG 3



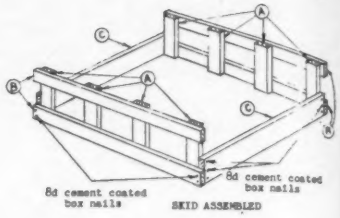
FRONT AND BACK MEMBERS OF SKID
2 REQUIRED

FIG 4



SUSPENSION BRACES
2 REQUIRED

FIG 5



SKID ASSEMBLED

FIG 6

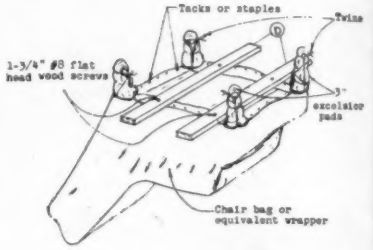
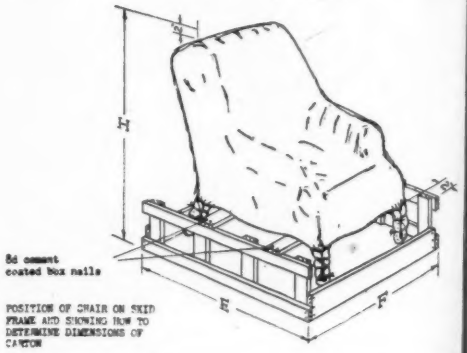
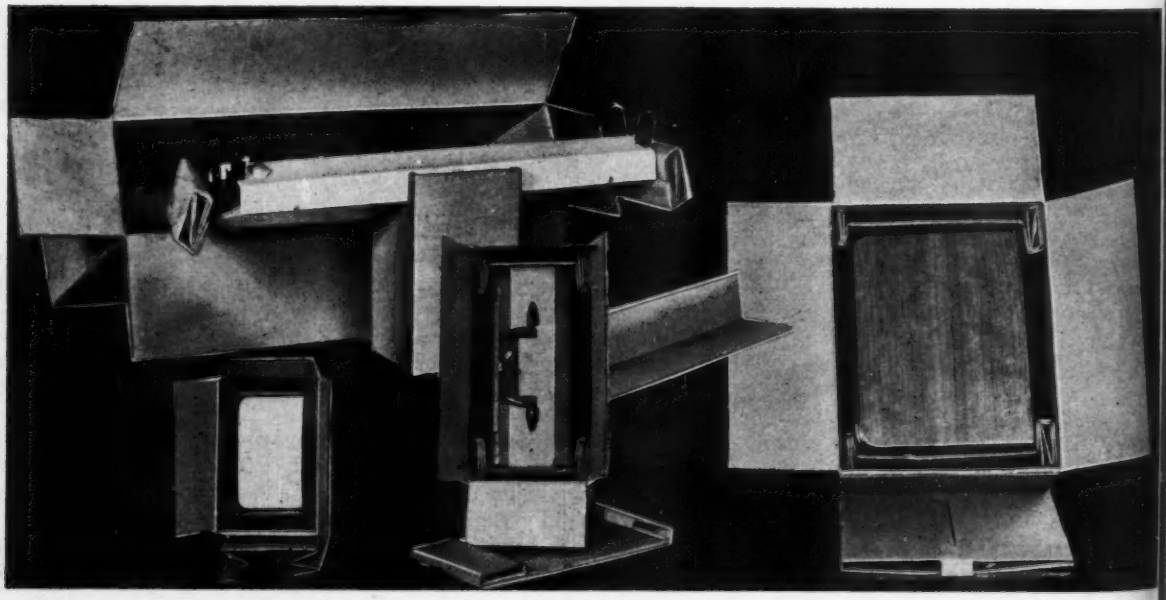


FIG 7



POSITION OF CHAIR ON SKID FRAME AND SHOWING HOW TO DETERMINE DIMENSIONS OF CARTON

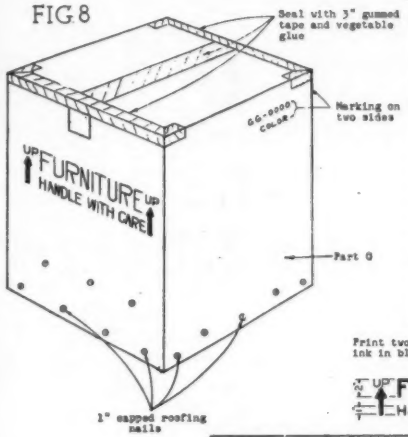


PACKING PROCEDURE

1. Assemble side construction of skid frame with 7d cement coated box nails, as shown in Fig. 2.
2. Assemble skid frame with 8d cement coated box nails, as shown in Fig. 5.
3. Place bag over chair and secure to bottom frame with staples or tacks, as shown in Fig. 6.
4. Wrap legs in 3" excelsior pads and tie in place with twine, as shown in Fig. 6.
5. Bore two 3/16" screw holes in each suspension brace, Part D, and attach to bottom of chair with 1-3/4" #8 flat head wood screws, as shown in Fig. 6.
   NOTE: Suspension braces are to be attached with equal portions extending beyond sides of chair, to maintain equal clearance.
6. Position chair on skid frame and secure suspension braces in place with 6d cement coated box nails, as shown in Fig. 7.
7. Place carton over chair and attach to skid frame with 1" capped roofing nails as shown in Fig. 8.
8. Flaps on same side as ends of suspension braces to be folded in first, whenever possible.
9. Seal carton with vegetable glue and 3" gummed tape, as shown in Fig. 8.
10. Stamp or stencil Wards division, article number, color and other required identification on two sides of carton in 3/4" characters, as shown in Fig. 8.

MATERIALS REQUIRED			
FIGURE	PART NO.	PCS. REQ.	SIZE AND MATERIAL
2		2	Side construction
	A	8	(S + 1/2") x 2 x 1
			Gr. 2-3 rough lumber
	B	4	(L + 6) x 2 x 1 Gr.2-3
			rough lumber
3	C	2	(W + 4) x 4 x 1 Gr. 2-3
			rough lumber
4	D	2	(W+6) x 3 x 1 Gr. 2-3
			rough lumber
6		4	3" excelsior pads, length
			as required
		1	40-lb basis weight kraft
			paper chair bag or
			equivalent in kraft
			wrapping paper
		As Req	2-ply sisal twine or
			equivalent
		4	1-3/4" #8 flat head
			wood screws
8	G	1	Corrugated carton with
			regular slotted top flaps
			and no bottom flaps
			Size: See Fig. 7
			Length = (F + 1/4)
			Width = (E + 1/4)
			Depth = H
			275-lb test A-flute
			corrugated board
		As Req	7d and 8d cement coated
			box nails
		As Req	Staples or tacks
		As Req	1" capped roofing nails
		As Req	3" width 60-lb basis
			weight gummed kraft tape
		As Req	Vegetable glue

FIG. 8



Print two sides of carton in flat black ink in block letters as shown below.

UP FURNITURE UP
HANDLE WITH CARE

WARD LOUNGE CHAIRS WITH LEGS EXCEEDING 4" IN LENGTH SUSPENDED IN CARTON	STANDARD MP 66-Op 203
FOR: MAIL ORDER ☐	DATE January 8, 1947
RETAIL ☐	PREPARED BY: A.T. Edwards
PACKAGING BY: SOURCE COMPLETE ☒ PARTIAL ☐	CHECKED BY:
PREP. BY: MONTGOMERY WARD COMPLETE ☐ PARTIAL ☐	APPROVED: 1/9/47
MERCHANDISE PREPARATION DEPARTMENT	
MONTGOMERY WARD	

WARDS PACKAGING PROGRAM

James G. Witte, in charge of Montgomery Ward's 40 million dollar packaging program, is responsible solely to top merchandise management. Ward's gigantic program embraces three related activities . . . packaging engineering, surface design and merchandise literature . . . and has as its objective increasing sales and profits "by the presentation of merchandise in packaging that is functionally sound, sales stimulating and economically designed." The program recognizes that:

1. Merchandise must reach the purchaser in an inviting and usable condition . . . Packaging is an integral part of merchandise value.
2. A packaging program must be coordinated and integrated not only with marketing but with materials handling and all other physical phases of distribution.
3. A packaging engineer to be good must be familiar with manufacturing processes since his activities frequently involve recommendations for redesign not only in the interest of better packaging and display but to facilitate handling, shipping and storage.
4. Good packaging takes average consumer requirements into consideration . . . The packaging engineer must have a working knowledge of market analysis.
5. Standardization and simplification is an essential part of any packaging program . . . Ward's Merchandise Preparation Standards give complete and detailed information as to package dimensions, the materials to be used, and packaging procedure.
6. A systematic and scientific method of checking and analyzing all shipping damage claims is necesasry in order to profit by experience.

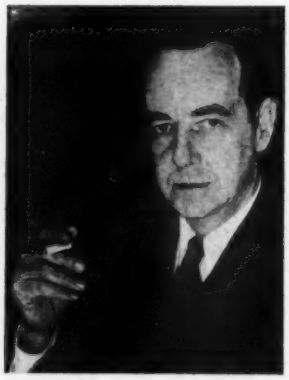
Before and after. The lower row is the new family of packages designed by Mr. Webster for the 1947 Christmas market. The problem was to work out a basic design applicable to various sized and shaped packages.

First Steps in Package Design

Packaging involves more than merely providing a container with sales appeal . . . Packages must not only be handled, stored and shipped but frequently must conform to various legal requirements . . . The Check List approach to the problem of design provides the basic information necessary to coordinate packaging with all of the distributive phases.

By BENJAMIN L. WEBSTER, S.I.D.

Industrial Designer
New York



HERE is a check list which outlines much of the information that should be available to a package designer before he starts to work. Package design like any other design program divides itself into four major parts. The first of these parts is to define the problem as clearly as is humanly possible; to collect all pertinent information regarding the proposed design; to survey all competition and also to inspect packages of a similar nature where an attempt has been made to solve a similar problem.

The second step after all data has been collected and defined is the creative stage in which various solutions to the problem are drawn up in sketch form. It is here that the ingenuity of the designer and his creative talent come in play. The result of this stage may be one or many rough sketches which we refer to as idea sketches which are then used for discussion with the various departments of the organization that are concerned with packaging. Out of this discussion, which should be very frank and thorough, is selected the best idea for complete development.

The third stage is the detailed study of this best design. This should be done in the form of dummies or models which duplicate as closely as possible the finished package. Frequently, during this stage minor changes are made to meet certain practical requirements which will be put forward by various departments concerned.

The fourth stage is one which is frequently omitted to the detriment of the finished package. This is superintendence by the designer of the execution of his package, the selection of the paper, colors or other materials involved, through the manufacturing, filling, and sealing of the final package. Frequently during this stage in package production minor changes which do not appear important can ruin the original design intent with the result that the finished packaging is a disappointment to all concerned.

In this check list we are only concerned with the first stage in packaging; namely, the gathering of necessary data. It will be noted that this list starts in the home

(*Continued on Page* 72)

Questions for Package Design

The first step in package design is to define the problem as clearly as possible. The following questions will help you collect the basic information necessary to coordinate packaging not only with marketing but with other distributive phases.

A. PACKAGE IN THE HOME

- Is package immediately destroyed?
- Is package used to store contents until used up? How long is this period?
- Should package have a dispensing device?
- What is the average amount of contents used each time?
- Is package designed for re-use, in the nature of a premium?
- Is package returnable?
- Where in the home is package stored? Before use? During use?
- Where is the package used?
- Is package used later to store other material?
- What effect do the foregoing have on size, color, material?
- Is package for a new product?
- Have any surveys been made of consumers?

B. PACKAGE IN THE STORE

- What types of stores will sell the package?
- What class of customers do they serve?
- Must the package do most of the selling?
- Does package form part of display?
- At what distance must package be identified?
- How is identification of contents achieved?
- What is rate of turnover?
- Where is package kept in selling space?
- How is package handled in the stock room?
- What can be done to simplify handling of package?
- Have the opinions of distributors and dealers been canvassed?

C. PACKAGE IN TRANSIT

- How is package shipped? What types of carriers?
- Are standard cartons or cases or crates used?
- How do these factors affect dimensions?
- What protective measures are required against temperature? moisture? shock? pilferage? vermin?
- Have the carriers any recommendations or standards to be considered?

D. PACKAGE IN WAREHOUSE

- How is package stored?
- How is it handled?
- What are usual units of shipment?
- How are inventories taken?
- How long is package in warehouse?
- What protective measures are required?

E. PACKAGE AT PLANT

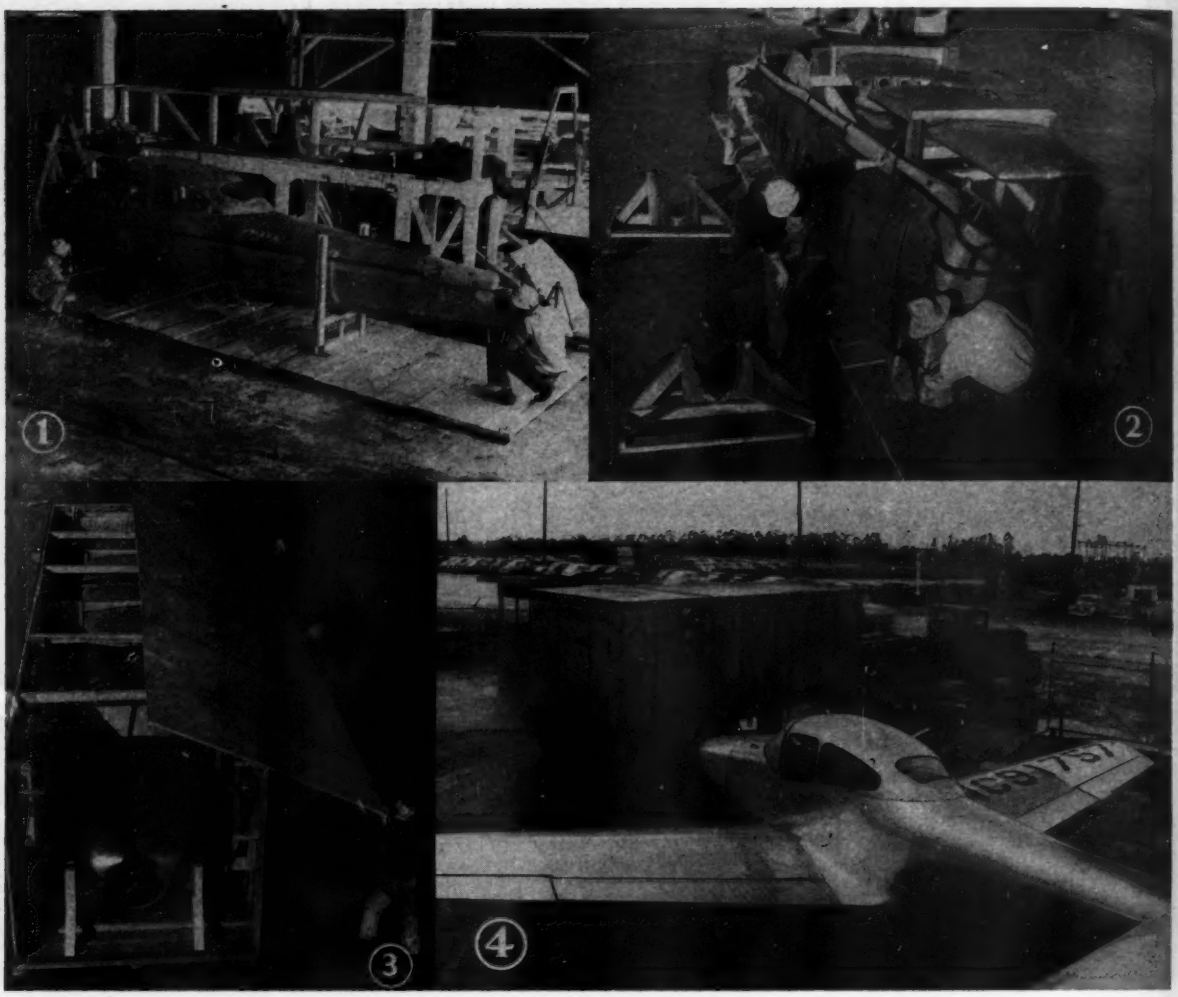
- In what form is package received? quantities?
- Where are empties stored?
- What are filling and labeling methods?
- What types of machines are used?
- What grades of employees are involved?

F. THE PACKAGE AND OTHER DESIGN AND PROMOTION

- Is there a trade mark?
- Is there a long established type face?
- Is there a standard color scheme?
- What type of art work is used in advertising and display?
- Are there radio programs?
- Are there established customs in the industry that effect packages?
- What other products are made?
- What are competitors packages?
- What packages by others present similar problems?
- What are opinions of various departments?

G. THE PACKAGE AND THE LAW

- What government requirements exist as to size? descriptions of contents? Grades?
- What trade customs exist within the industry?
- What patent information is required?



North American's Packing

By GALE C. CUNNINGHAM

Packaging Engineer
North American Aviation, Inc.
Los Angeles

PRESENT DAY packaging enjoys a cost safety margin because of increased prices of practically all commodities. With packaging allowances based on a percentage of the sales price of the product, packaging men are able to incorporate advanced protective packaging measures developed in recent years, in spite of the increased cost of packaging materials.

We must bear in mind, however, that this situation will not continue. As the merchandise pipe lines are filled, and prices once more become competitive, allowances for packaging costs will shrink in proportion.

In this connection, an important factor must be impressed into the minds of management. There are many ways to reduce packaging

Fig. 1—Stripped to a minimum, fuselage of North American "Navion" is mounted in specially-built shipping crate.

Fig. 2—Wings are brought to crate in specially constructed dollies.

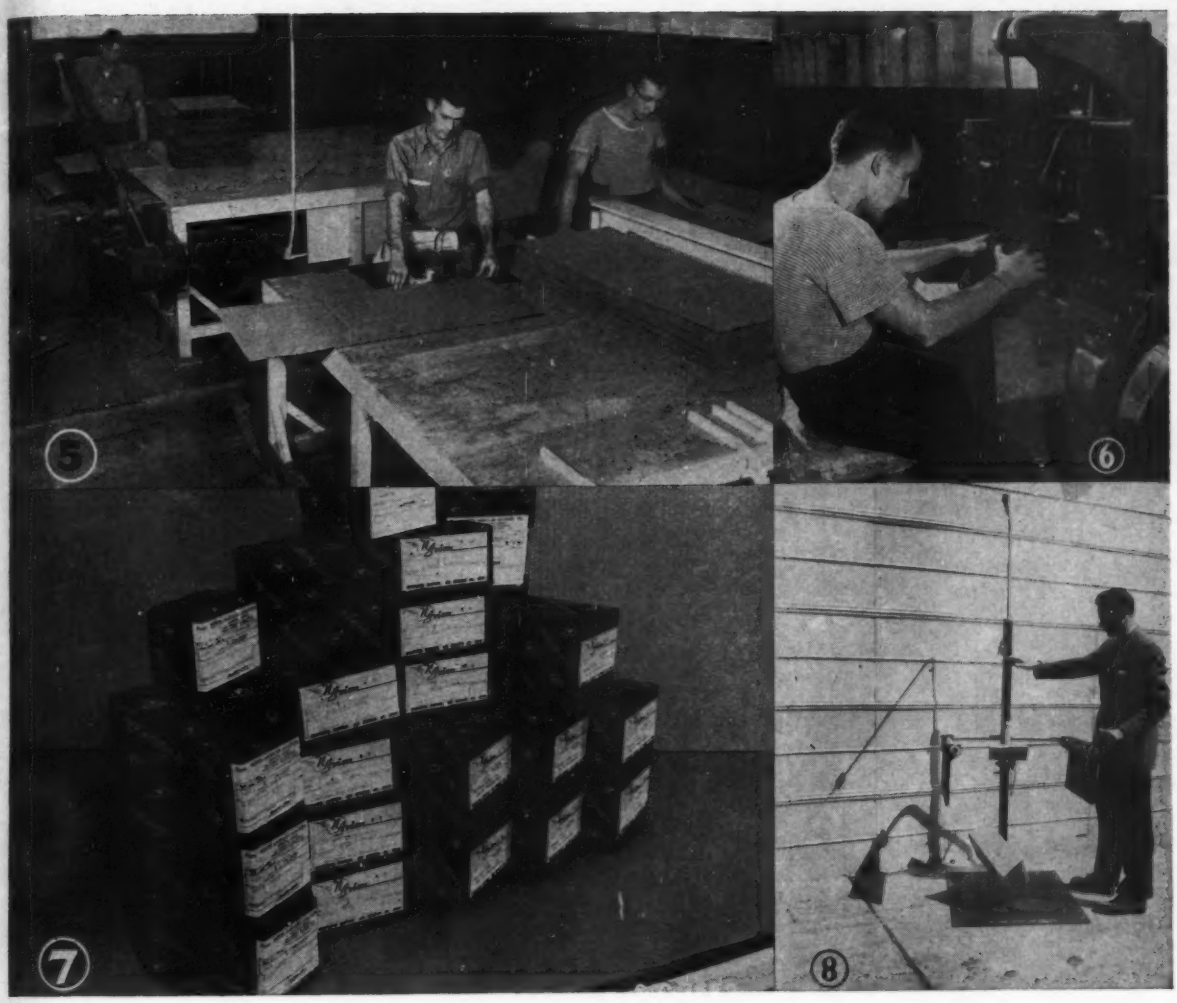
Fig. 3—In final step, plywood lid is placed on crate. Use of water-resistant plywood eliminates necessity of waterproof paper liner, and affords excellent panel diagonal strength.

Fig. 4—Completed crate ready for shipment.

Fig. 5—North American designed and constructed own carton making machine, similar to that used as a sample-making table by carton manufacturers.

Fig. 6—Metal edge stayer machine, used to assemble boxes from die cut flats.

Fig. 7—"All over" design used on boxes. Grease and water resistant board is employed.



Program

costs in addition to reduction of actual money allowances.

Many companies spend thousands of dollars for public relations and customer good will. Yet, often the only personal contact between the manufacturer and the customer is the package in which the purchased product is received.

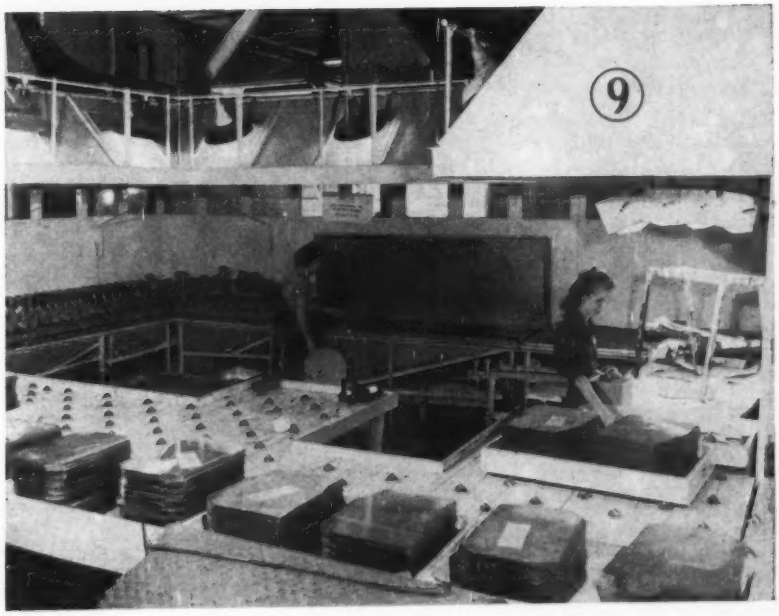
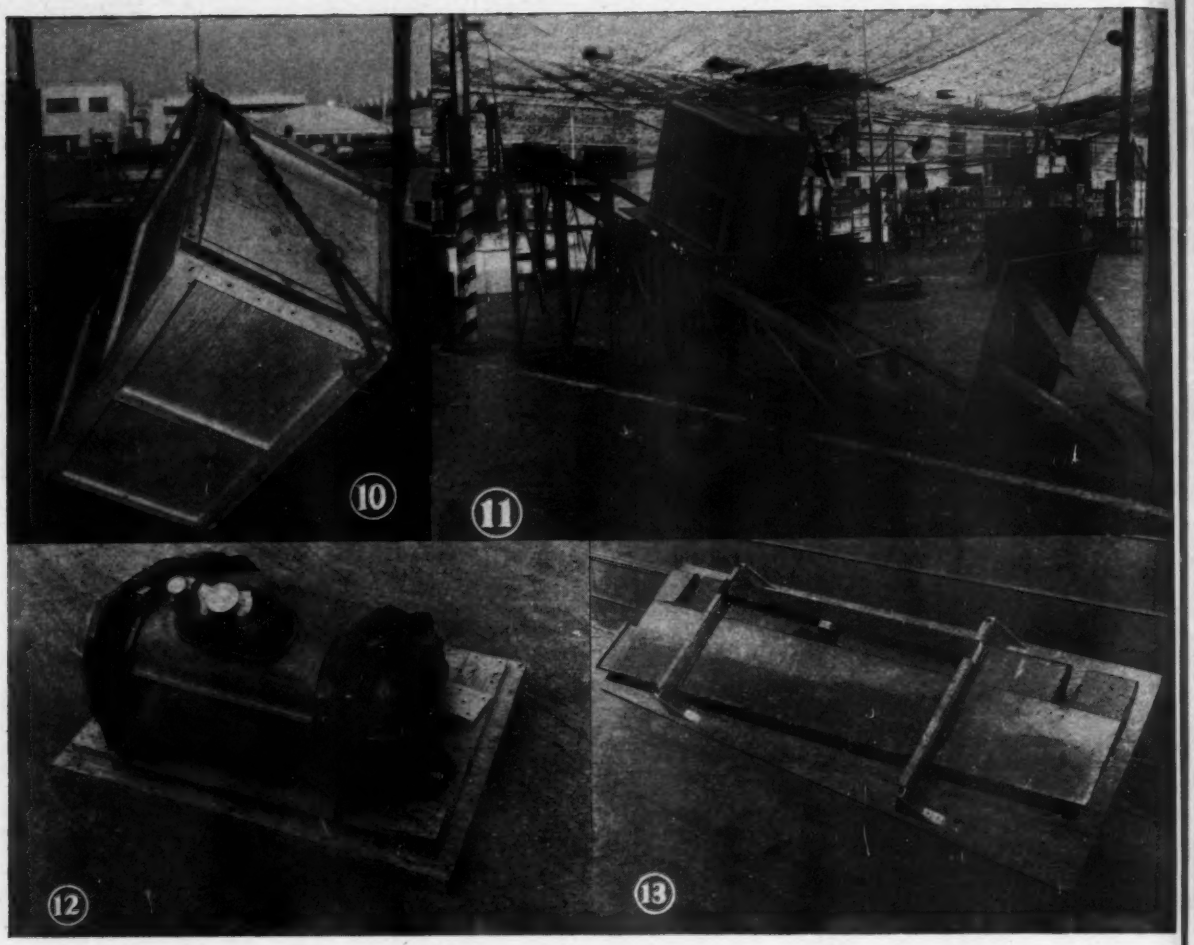
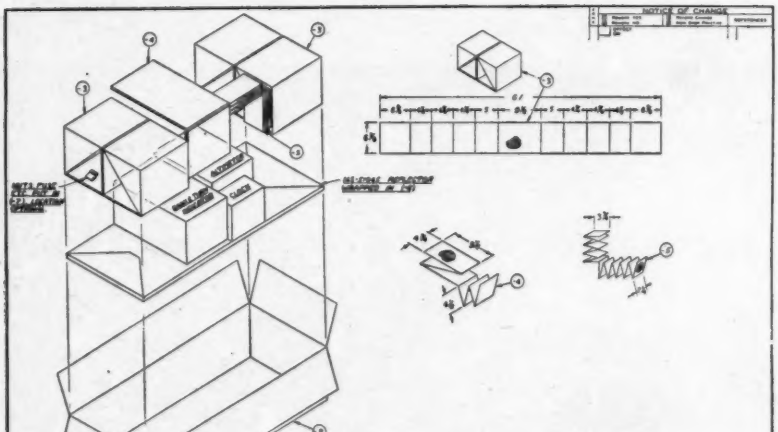


Fig. 8—Testing package on 50 foot-pounds impact test basis.

Fig. 9—Cleaning parts prior to preservative applications is accomplished by using "two step" stoddard solvent wash, plus methanol rinse. It is performed in a specially constructed booth. Note roller bearing table.

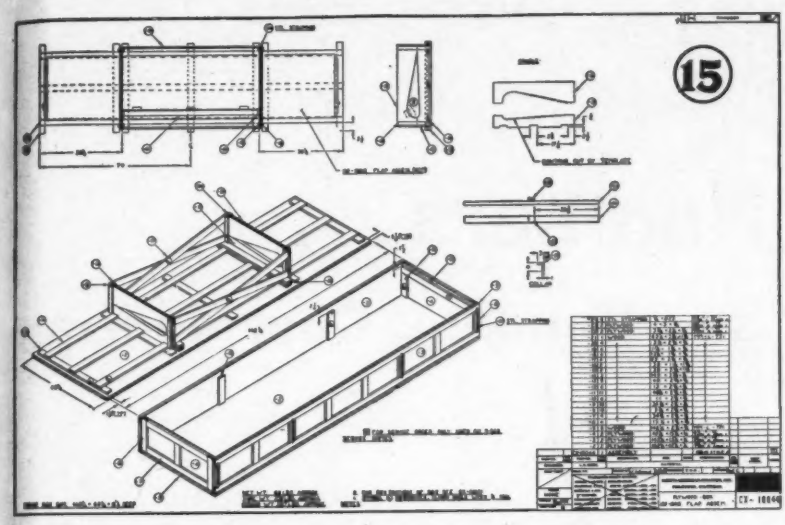




If a sloppy package or a damaged product is received, the customer's opinion of the company may be formed accordingly. The loss of this good will may well cost thousands of dollars annually. Conversely, the saving of customer good will can be charged off, in part, to public relations accounts.

Nowhere is protective packaging and good package appearance more important than in the export field. American merchandise has been shown to more foreign markets during the last five years, through lease-lend and relief agencies, than in any preceding period in our history. In competition with other countries, American manufacturers must present an equivalent or a better packaged product.

North American Aviation, builder of the P-51 Mustang, B-25 Mitchell and AT-6 Texan, entered



the personal airplane field with its Navion, an all-metal four-passenger airplane. Sales and service of the Navion to foreign countries play an important part in the plans for Navion world-wide expansion.

For shipments of this type, it was decided to disassemble and crate the Navion. Heretofore, airplanes and large components were crated in waterproof, paper-lined, sheathed wood crates for export shipment. For the Navion, it was imperative that the weight and cubage of the crate be reduced to a minimum and for this purpose, attention was turned toward plywood as a sheathing medium. The use of a water-resistant plywood not only eliminated the need for a water-proof paper liner, but also afforded excellent panel diagonal strength, thus eliminating all diagonal frame members and effecting a decided weight reduction. The use of plywood adds measurably to the rigidity of the crate base, an important factor in the method of attaching the airplane to the crate interior. Figs. 1 to 3 depict several stages of the Navion crate under construction and Fig. 4 shows the completed crate ready for shipment.

The method illustrated in Fig. 1 to Fig. 4 packs the Navion which has a fuselage length of 27 ft. 3 in. and a wing span of 33 ft. 4½ in. into a crate with outside dimensions of 26 ft. 6 in. by 7 ft. 1¾ in. by 6 ft. 10½ in., and with total cubage of 1,323 ft. and a gross weight of 4,640 lb.

A very serious cost problem faced by many manufacturers is the difficulty in procuring small quantity corrugated cartons. Many plants manufacturing a great variety of parts find their total requirements for any given size of carton too small to be attractive to vendors of corrugated cartons. This is particularly true of aircraft and allied industries where constantly changing airplane models require constantly changing spare parts. While the overall usage of board is many tons annually, 100 cartons of a given size may be sufficient to complete a total contract.

N.A.A. solved the problem of procuring corrugated cartons for its hundreds of diversified spare part sizes by designing and constructing a carton making machine, (Fig. 5) similar to that used

(*Continued on Page* 87)

Fig. 10—Drop test method used to develop proper attachment of parts to box interior. Cleated plywood and nailed wood box has part attached to one surface only.

Fig. 11—Incline impact test.

Fig. 12—Steel straps used to attach part to surface of box.

Fig. 13—Bolted cradle is used to secure part to side of box. Effort is made to tie back to cradles, rather than to any other portion of box. This packaging method accomplishes primary aim of "two point suspension."

Fig. 14—Container drawings for corrugated cartons. Packaging engineering department designs, tests and evaluates each package.

Fig. 15—Container drawings for cleated plywood boxes. Costs are reduced by retaining permanent record of each design, thus precluding the redesign of containers for subsequent shipment of identical parts. Damage claims are minimized, thereby reducing costly paperwork and shipping delays.

Fig. 16—Portion of North American Aviation packaging and shipping area.

Preferred Numbers...

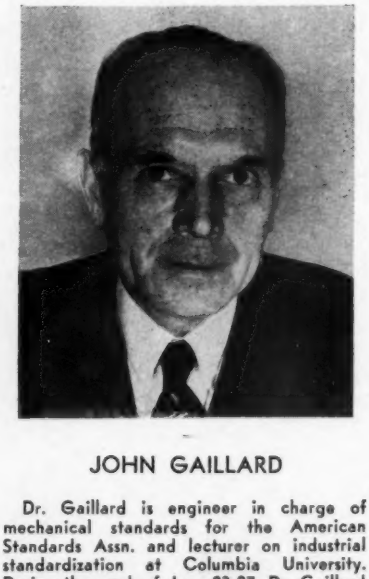
for Packaging and Handling Coordination

The adaption of Preferred Numbers to container size ranges would tend to the eventual simplification and harmonization of related dimensional elements in production and distribution . . . materials specifications, packaging machinery, pallets, materials handling equipment, and other links in the distributive chain.

By JOHN GAILLARD

Mechanical Engineer
American Standards Assn.

SERIES of Preferred Numbers have been standardized to serve as a guide to those who have to adopt progressive values, such as dimensions of length, or cubic contents, or characteristics of materials (such as tensile strength) required to cover a certain range of requirements with the necessary flexibility, yet, with the smallest possible variety. Thus, a manufacturer planning the design of a new product to be made in a line of increasing sizes, will have to decide what shall be the smallest and the largest unit; how many sizes there shall be between these extremes; and what shall be the increase in size between each two consecutive members of the series. American Standard Preferred Numbers[1] shown in four basic series in Table 1, have been set up as follows. The range from 10 to 100 is divided into 5, 10, 20 or 40 steps, forming the 5-, 10-, 20- and 40-series. In each series, the increase between two consecutive values is a constant percentage: 60 percent for the 5-series, 25 percent for the 10-series, and so on. Incidentally, these percentages have been rounded from the exact theoretical values, but the differences are very small. The idea back of the constant step-up is that an increase in a given value, to have a certain significance, must be a definite percentage of that value. For example, the addition of an inch to a length of 10 in. is just as significant as is the addition of 5 in. to a length of 50 in. Therefore, to establish a logical progression in a series of values, each of them should have the same ratio to its immediate predecessor.



JOHN GAILLARD

Dr. Gaillard is engineer in charge of mechanical standards for the American Standards Assn. and lecturer on industrial standardization at Columbia University. During the week of June 23-27. Dr. Gaillard will hold an intensive five-day seminar on the organization and technique of industrial standardization at the Engineering Societies Building, New York. This seminar is available to company standards engineers, educators planning college courses in standardization, and others interested in the subject.

The choice of the range from 10 to 100, and of the 5, 10, 20 and 40 steps into which it is subdivided, may be called arbitrary. Preferred numbers could be established also on the basis of a different range and, say, 4 or 6 steps. However, the Preferred Numbers adopted as American Standard and also recommended for international use by the former International Standards Association (ISA), have been set up as shown in Table 1 in accordance with their development by the French Colonel Renard in the 1870's. When he assumed command of the captive balloon section of the French Army, he came upon a glaring case of excessive variety. There were 425 different cables for mooring the balloons. Renard reduced this number to 17 and in doing so, established the Preferred Numbers series which now have become one of the finest tools in the hands of the designer and the standardizer. They are being effectively used for selecting a progressive series of values from a wide variety that has grown up, sometimes in the course of long years, such as

[1] Copies available from the American Standards Association, 70 East 45 St., New York 17, N. Y. (American Standard Z17.1-1936, reaffirmed 1946)

5 Series (60% Steps)	10-Series (25% Steps)	20-Series (12% Steps)	40-Series (6% Steps)
10	10	10	10
			10.6
		11.2	11.2
			11.8
	12.5	12.5	12.5
			13.2
		14	14
			15
16	16	16	16
			17
		18	18
			19
	20	20	20
			21.2
		22.4	22.4
			23.6
25	25	25	25
			26.5
		28	28
			30
	31.5	31.5	31.5
			33.5
		35.5	35.5
			37.5
40	40	40	40
			42.5
		45	45
			47.5
	50	50	50
			53
		56	56
			60
63	63	63	63
			67
		71	71
			75
	80	80	80
			85
		90	90
			95

Table I.—Basic preferred numbers in the decimal series 10 to 100.

the sheet metal thicknesses according to a multitude of gage number systems. The American Standard, Preferred Thicknesses for Uncoated Thin Flat Metals (under 0.250 in.) (B32.1-1941) recommends the use of 34 thicknesses from 0.224 to 0.004 in., following the 20-series of Preferred Numbers. Another, at least equally important purpose for which Preferred Numbers may be used, is the laying out of standard values for the basic characteristics of new products, pending the evolution of their detailed design, which may differ from one manufacturer to another. Thus, when a new type of pump is brought out, one manufacturer may decide to make it, to begin with, in the following capacities according to the 5-series: 100, 160, 250, 400, 630 and 1000 gallons per minute. (It should be noted here how the series of Table 1 can be adapted to the range in which the designer or standardizer is interested, by simply shifting the decimal point.) If now, more manufacturers are developing the same type of pump for the market, working along different lines of design, but all using Preferred Numbers as a guide, there will be automatically established a standard series of basic ratings. This will prevent excessive variety from occurring and leads to concentration on the fewest possible units that will answer the requirements of the market—a benefit to the users as well as the manufacturers.

It would appear that Preferred Numbers may be applied to good advantage in the packaging industry, in either of the two ways just described. Taken as a whole, packages have grown up haphazardly as to size, cubic content and detail dimensions in general. Even simple cartons are largely supplied to the orders of the purchaser, which accounts for the innumerable variety and their lack of basic relationship as to dimensions. Let us assume that a manufacturer finds that he needs a series of cartons in lengths varying from 10 to 20 inches. He comes across a list of 34 cartons in this range which are being offered for immediate delivery from stock. The dimensions include 12 different lengths, as follows:

10 12 13¾ 14 15 16 17 17½ 17¾ 18 18½ 20 inches

Clearly, no Preferred Numbers have been followed in the layout of these lengths. Rather, instead of having been laid out, they appear to have resulted from diversified requirements. Only the sequence 14, 15, 16, 17 happens to be part of the 40-series. But what of the rest of the values?

To facilitate his analysis, the manufacturer plots the listed lengths in a "prefernograph" (this is a contraction of the term "preferred numbers graph"), see Fig. 1. Here, the lengths are represented, in their order of progres-

(*Continued on Page 70*)

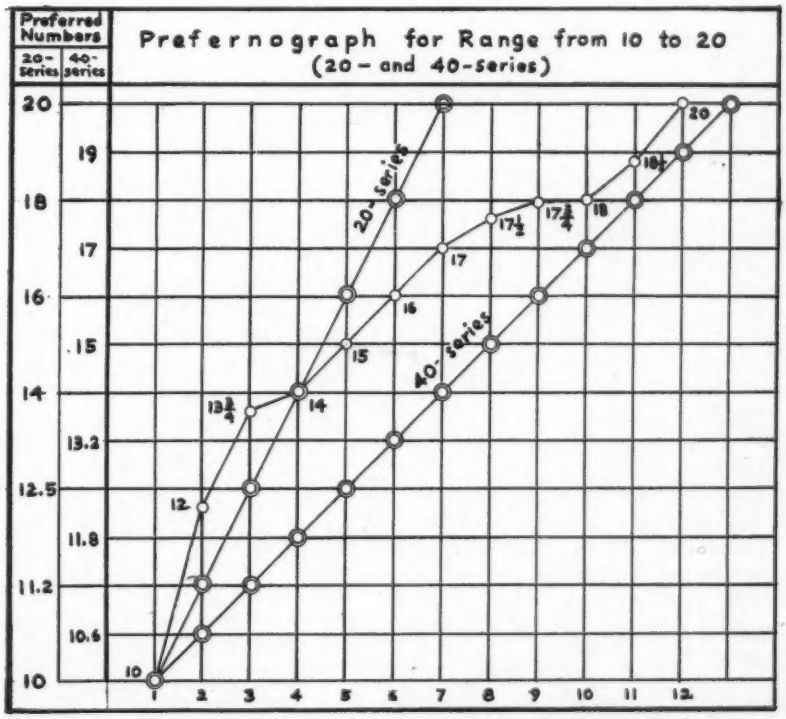


Fig. 1 Prefernograph for comparing twelve lengths of stock cartons with the 20- and 40-series of Preferred Numbers

Packing

Packing is a complicated and highly specialized field of engineering as these case histories prove . . . The packing consultant's "know how" can promote good will and prevent loss and damage claims which sometimes run into thousands of dollars.

By FRANK W. GREEN
Packing Consultant

THE packing consultant is a man who has solved the problems of preparing hundreds of different products for both domestic and export shipment. He is familiar with transportation, materials handling, carloading, applicable regulations, specifications, ship stowage and world port conditions. He has first hand knowledge of the manufacture of many types of packaging and packing containers and materials. His extensive training covers all subjects affecting the preparation of materials for shipment. His reference library has been collected laboriously over a period of many years and consists of several thousand pamphlets, reports, specifications, drawings, samples and books.

In order to keep up to date the packing consultant must be a member of the professional societies related to his work. He must attend the various packaging and packing conventions, conferences and expositions. It is also necessary for him to subscribe to and to read all of the trade magazines and other publications having any bearing on the subject. He must add to his library almost daily.

An article in the December 1946 issue of DISTRIBUTION AGE [1] stated that for every $15 spent by industry on production research only one dollar is spent on distribution research. From this it is evident that hardly any attempt has been made to reduce the costs of preparing materials for shipment. In most cases there are opportunities to save many thousands of dollars per year for the company, association or other organization which discusses the subject with a packing consultant and has him set up an economical but adequate modern management program for the packaging and packing of their products. This can be done at a cost which is only a fraction of the savings to be realized.

A packing consultant approaches the problem from the point of view of the management whose interests he is protecting. Because of his broad experience he knows what elements of the business have a bearing upon the problem and follows his study through in a streamlined manner, covering all things which will affect the final decisions but not taking time for other things. His general knowledge of all phases of engineered packing gives him a long head start on the overall problem. It is then a simple matter of experienced evaluating, selecting, applying, testing and correcting. All of these steps are accomplished in a surprisingly short time. The entire development of the solution is set forth in a comprehensive report for the convenience of all concerned.

[1] Henry G. Elwell, Traffic Management for Trade Associations.

. . . Case Histories

Case No. 1—Doodles His Way Out . . .

"THE TELEPHONE seemed to smoke as the voice gave a final blast and rang off. Mr. Carver wiped a glistening forehead. Well, the "old man" had a right to lose his temper, he supposed. Six precision machines worth $12,000 each now lying on a foreign dock as crated scrap. Mr. Carver sat and thought while he doodled "splinters and scrap" on his desk pad. He knew he was in serious trouble . . . another mistake like that would require his resignation. Absent-mindedly he looked at his doodle pad, and buzzed his secretary, "Get me a packing consultant." Yes sir he would get a man of unimpeachable reputation, an authority on export packing who could direct each phase of shipping and, most important, share with him the responsibility for safe arrival. This outsider could give him the impartial advice of an expert whose recommendations he could approve without fear. How did it work out? Six months later Mr. Carver got another raise and an Oriental rug.

Case No. 2—Philadelphia Calling . . .

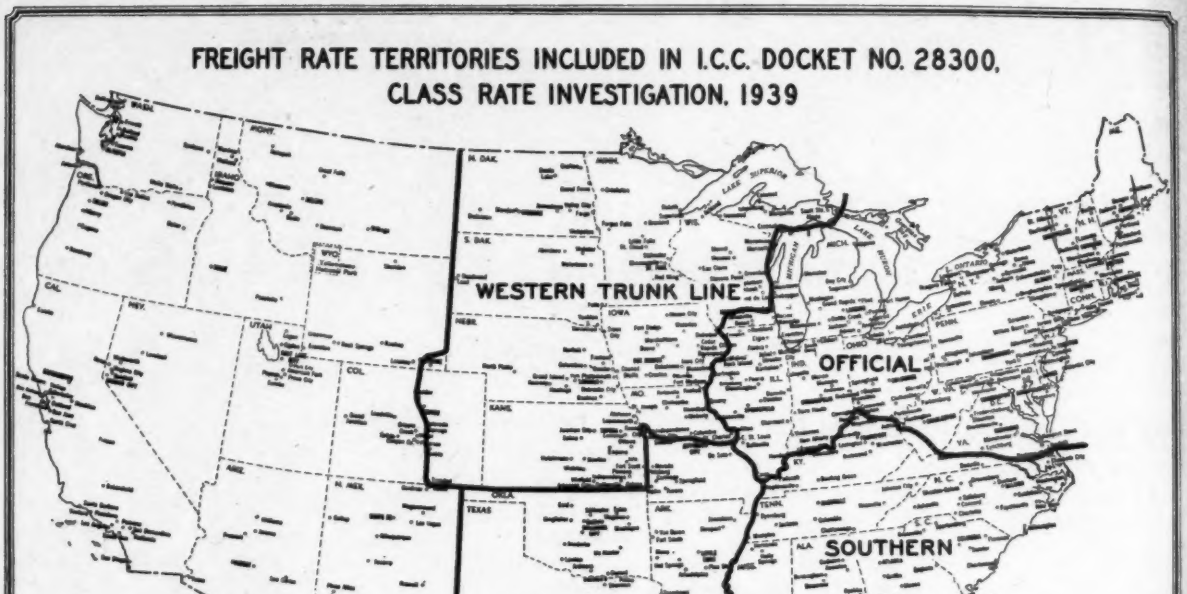
"THIS IS CAMPBELL . . . They said they were exporting 'advertising novelties' so I insured them at a fairly low rate. Come to find out, the stuff's all china and glass. On their first shipment I nearly lost my shirt. They're going to ship $30,000 worth next week and I've got to get a packing consultant out there fast to straighten out that packing. Can you get there by Monday?"

Case No. 3—Afraid to be Safe . . .

MR. MOODY finally went to see his old friend, Mr. Corrigan. Moody had been a small-time machinist but by now his newly-invented household appliance had plummeted him into big business. Now, about to enter the export market, he was glad that Corrigan was in the box business. After a little discussion Mr. Corrigan spoke his mind, 'If you try to figure out the export packing by yourself—well, I think you're crazy. I've been in the box business for twelve years, making boxes mostly for domestic shipment. I know that there is more involved here than just the box. You need someone who has over-all experience and who has spent a lot of time on this subject of export packing." Mr. Moody objected that it would cost too much to get in a consultant. "The cost is much lower than you think. A packing consultant knows how to tackle the job and he'll have a better answer in three or four days than you'll get in a month any other way. Besides if you lose a couple of your units it'll cost you more than getting a consultant in the first pace."

Case No. 4—Financial Theory . . .

MR. WARREN J. BILLS enjoyed his position as treasurer of a large department store in a small city. He prided himself upon his store's up-to-date methods and felt that its increasing mail order business was a good sign. The public accountants were coming today. While waiting for them, he took out the statements and records entitled "Shipping." This subject was becoming more distressing to him every day. He didn't know very much about it except that it was an end-of-the-line operation and was costing far too much. Looked bad on the reports. Something had to be done to get that department in line, synchronized on an efficient and economical basis—all that would require special "know how." When the public accountants arrived he told them about his problem. They advised him that there were packing consultants who could do all those things for him through regular packing audits on a fee or small retainer basis.



A Primer of Freight Rates

Part 2—The Processes of Freight Rate Making

By G. LLOYD WILSON

Professor of Transportation and Public Utilities
Wharton School of Finance and Commerce
University of Pennsylvania

In this article, Dr. Wilson deals with

- ***Rate Making Machinery***
- ***Types of Freight Rates***
- ***Traffic Territories***
- ***Interterritorial Rates***
- ***Territorial Rate Structures***
- ***Reparation Awards***

CARRIERS' organizations for freight rate-making differ greatly, depending upon the type of carrier, whether railroad, steamship line, or motor carrier, upon the size of the carrier and of the territory it serves, and whether the organization is centralized in one headquarters or divided into regions with a general traffic department at headquarters. In order to simplify the matter, a diagram is shown in Fig. 1 of a fictitious railroad which has its traffic organization in one headquarters organization.

Traffic policy is decided by the executive officers upon the recommendation of the vice president-traffic. Subordinate to this executive officer is a freight traffic manager who has responsibility for all matters pertaining to freight traffic and a passenger traffic manager who is responsible for passenger traffic work. Reporting to the freight traffic manager are the freight traffic manager in charge of sales and solicitation, who has responsibility for solicitation and developmental work, and the freight traffic manager in charge of rates and divisions, who has responsibility for the general rate department, the divisions bureau, and the tariff bureau. This is the corps of officers and employees who attend to the technical phases

of rate-making; the division of rates among carriers participating in through routes and joint rates; and the publication, posting, and filing of the carriers' freight tariffs.

Industrial traffic departments have subdivisions of their organization in which officers, supervisors, and other employees study the industry's rate requirements; obtain and disseminate rate information; check or supply rate information for the checking of freight bills; negotiate with carriers' rate-making bodies or organizations for the establishment or modification of classification, rates, charges, and routes; and participate in the presentation of complaints and other proceedings before government regulatory bodies.

The Interstate Commerce Commission and many state regulatory commissions have reporting to a division of the Commission or to an individual Commissioner, a bureau of traffic or a bureau of rates and tariffs. These organizations administer the provisions of the Interstate Commerce Act or of the state statutes pertaining to the carriers' rate and tariff duties and to the rights and duties of shippers relating to rates. The carriers' tariffs and schedules are filed with these bureaus of the Commissions. Here the tariffs are examined for defects which would make them illegal and cause them to be rejected. Technical rate matters are handled by the staffs of the various Sections into which the Bureaus are divided. The bureau of traffic of the Interstate Commerce Commission is sketched in Fig. 2.

Carriers, including railroads, motor carriers, steamship and barge lines, and airlines, are members of freight associations or conferences which the carriers of these respective types maintain to provide media for the consideration of proposed rates and charges, for technical services in connection with rates, and for the publication of tariffs or schedules through tariff publishing agents authorized by the individual carriers to publish them in the name and stead of the individual carriers.

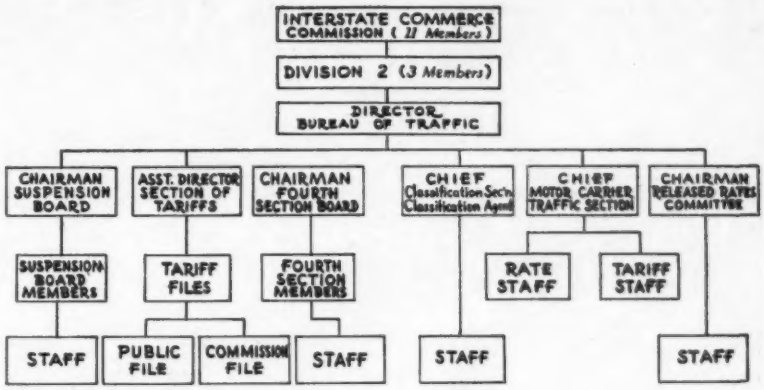


Fig. 1—Organization of ICC Bureau of Traffic.

It is impossible here to discuss the status of these associations under the law. It is sufficient here to sketch briefly the general pattern of their organization and method of work. The member carriers are represented on the conference committees by their traffic officers. Usually a full-time neutral or nonpartisan chairman is employed by the association or conference to administer the organization as its chief officer. A standing rate committee, composed of full-time technical rate men, is maintained by the conference to examine and advise with respect to rate matters coming before the association. A tariff publishing agent is engaged to publish and file tariffs under the authorization of the individual carrier members.

These associations, conferences, or bureaus receive from member carriers or from shippers requests or proposals for the establishment or change of rates or charges. These requests are placed upon the docket of the association after the requisite information about the rate has been received. Each item on the docket is numbered consecutively so that the member carriers may be sure they have received all of the proposals. In an emergency, a vote of the members is taken by telegram, but ordinarily the rate request or proposal is sent to the representative of each carrier in the conference for preliminary study. Periodic meetings of the representatives of the carriers are held in which all matters on the docket which have not been disposed of are considered. The committee has before it for consideration the information and comments of the standing rate committee and, in some cases, additional factual data and arguments from shippers or consignees who support or oppose the proposals.

The rate proposals placed on the docket bulletins give all the pertinent data with respect to the rate, charge, rule, or regulation

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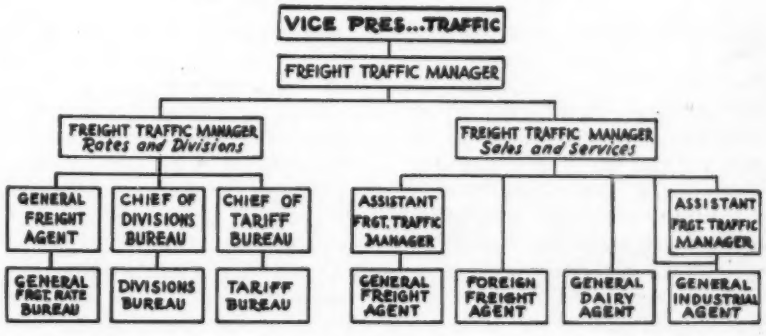
Fig. 2—A Railroad Freight Traffic Department.



Freight Forwarders and the CAB

Part 1—Are They Needed?

The answer, depending upon who gives it, may be yes, or no, or maybe. At any rate, the fate of the aerial freight forwarder probably rests in the hands of the CAB.

By JOHN H. FREDERICK

Air Cargo Consultant

SINCE EARLY this year the CAB has been holding hearings in New York, Chicago, Washington and San Francisco as the first step in determining the need for and economic desirability of air freight forwarders, and in determining its regulatory policy in regard to such operations. In these hearings the forwarders have made a very good case for the justification of their operations, which would be along the traditional lines of ground carriers so familiar to shippers.

Nearly all the airlines have published tariffs establishing rates on shipments of 3,000 lb. or more considerably lower per hundred lb. than the rates for shipments weighing less than that figure. The scheduled air carriers also assess a minimum charge for shipments weighing less than 25 lb. Like other carriers the airlines have found it more profitable to handle the larger than the smaller shipments. This opens a field for air freight forwarders since without changing their methods of doing business or adding appreciably to their costs they can accumulate a great number of small shipments and handle all the incidents of transportation in connection with them at a lower rate per shipment than can the airlines. Just as with ground transportation, part of the difference between the charges for large and small shipments is passed to the shippers and part is retained by the forwarders to cover their overhead expenses and profit. While all freight forwarders have not as yet indicated that they intend to get into the air freight field, about 60 applications now are under consideration by the CAB and others are filing almost daily. If the CAB decision is favorable to the air freight forwarders many more are sure to enter the business.

At present, however, not all of the air freight forwarder applicants propose complete forwarding service covering business solicitation; collecting, assembling and consolidating shipments to take advantage of plane load rates; furnishing pick-up and delivery services; loading planes; securing additional insurance above that provided by the air carrier; unloading and breaking the consolidated shipment at destination. Such operations would find the forwarders performing all the functions in the air transportation of cargo except actually flying the planes. The freight forwarders in air transportation so far largely have confined their activities to freight solicitation for the contract or nonscheduled air carriers, although a number of them have been turning over business to the certificated airlines as well.

Air transportation appears to be at least as profitable as has forwarder service in connection with ground carriers. Table 1 presents four examples of the savings at present possible by the consolidation of small shipments. A possible saving per package of $3.82

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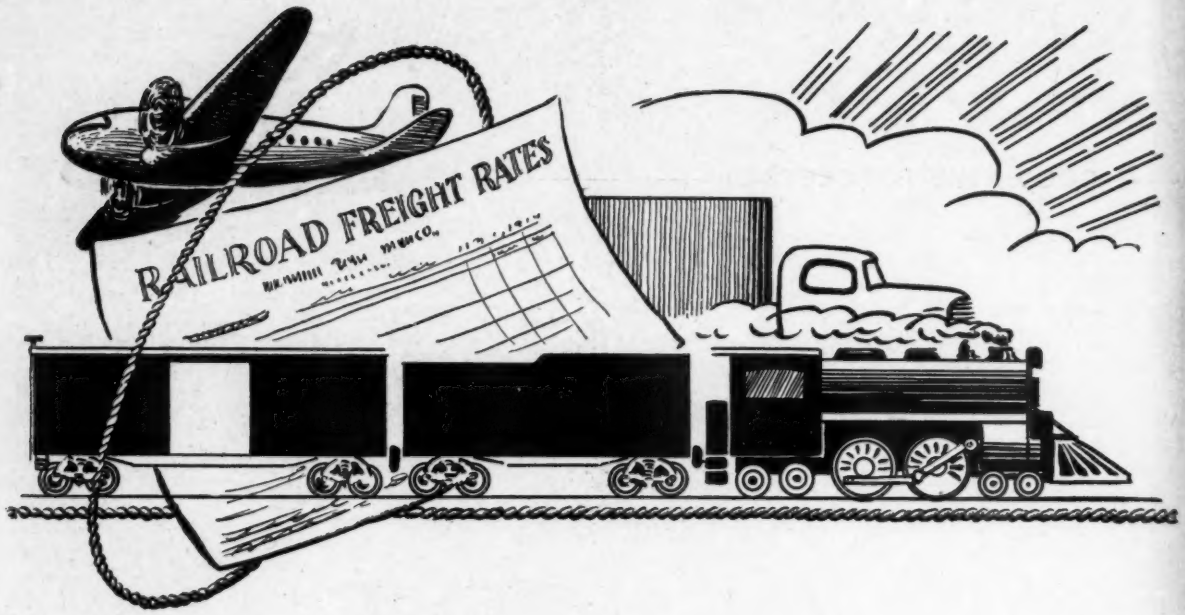


Carbon Copy Transportation

By D. R. DOMINIE

Traffic Manager
Polaroid Corp.

All of our basic principles of traffic and the economic rules guiding them, unfortunately, have been and still are based on the railroads. Instead of breaking new ground, truck operators copied their classifications and rate structures from the railroads. The airlines are making the same mistake. From the conception of air cargo each line has had different pickup and delivery provisions, different valuation principles, different tariffs and classifications. Progress has been made in almost every field but transportation. Transportation is slowly choking itself to death, a carbon copy death of astounding ineptitude.

TRANSPORTATION is not new. Today we talk in new terms, of innovations such as planes and air cargo, of new trucks, and of the speed that is the essence of our transportation policy. A few of us are fooled into thinking that this is our doing, that here we have a new and better transportation system, that we have reached a point of paramount development.

What we fail to realize is that all of our basic principles of traffic and the economic rules guiding them, unfortunately, have been and still are based on the railroads.

No matter what may be said, nor how fervently it may be argued, all transportation developments in the last 100 years follow almost to the letter the concepts, provisions and economic principles which have grown up around the railroads.

Two offshoots of rail transportation have come into being since the first train chugged down a set of wooden rails back in 1829. They are the truck and the airplane. They are new only in their outward characteristics. Economically and in principle they are as old as the railroads themselves.

Historically the railroads are fraught with contradiction. The first semblance of a railway was the tramway, used in England in the 18th century. Actually they were cars drawn on rails by horses and mules. America's first tramway was supposed to have been built by Silas Whitney in 1807 on Beacon Hill in Boston.

George Stephenson's "Rocket" which made its trial run on the Liverpool and Manchester Railway in England in 1829 generally is considered the first steam locomotive to be successful. In the same year the Americans countered with the "Stourbridge Lion" run by the Delaware and Hudson Railway and Canal Co.

From that point on the develop-

(*Continued on Page* 92)

They're delivering gasoline and saving it too in this rugged new Studebaker truck

IF you want to cut costs, get a Studebaker truck. Good news is sure to greet you every time you tally up your miles per gallon.

Better still, you find out that gasoline isn't all you save.

Your Studebaker truck is solidly built. That means just ordinary good care keeps it free from costly lay-offs for repairs.

The spotlight is on Studebaker

Take a good look at the heavy-duty-model Studebaker pictured above.

There's one good reason why you find Studebaker a spotlight name today throughout the truck world.

This powerful, sturdy Studebaker is the 1947 result of lessons learned in four years of wartime truck production.

It's built in the same factories, with the same tools, by the same craftsmen that turned out over 200,000 Studebaker military vehicles.

Powered by Hy-Mileage engine

You get more than low-cost power in a heavy-duty-model Studebaker.

Its brilliant Hy-Mileage engine comes complete with automatic choke, automatic spark control, adjustable octane selector, oil bath air cleaner and oil filter.

This truck is a driver's dream of riding comfort and handling ease. Its roomy cab alone has seven modern "extras" that cost you nothing extra.

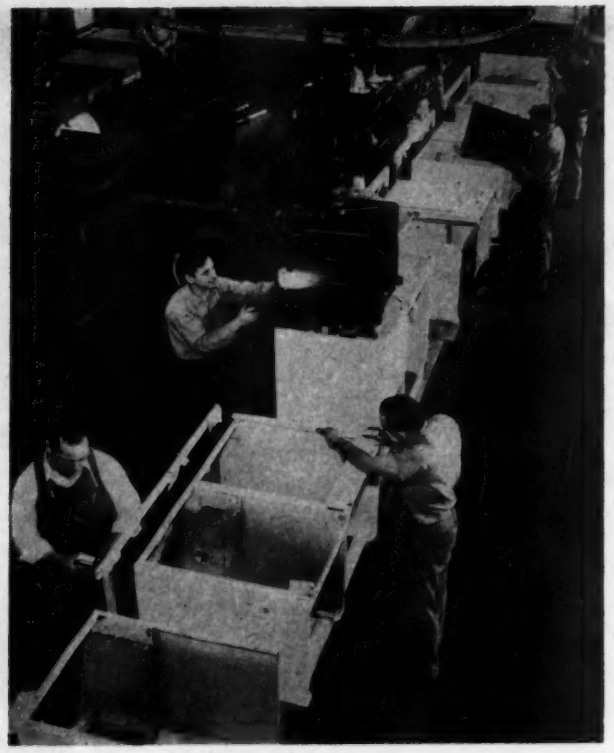
See this and the other Studebaker truck models at a nearby dealer's now.

You may have to wait a certain amount of time to get a new Studebaker. But when it arrives you're sure to be ahead plenty.

Studebaker

Builder of trucks you can trust

The Studebaker Corp'n, South Bend 27, Indiana, U. S. A.



Improved Handling Cuts Packing Costs

Because the shipping department is at the end of the production line, it too often is at the end of management's thinking and the distribution economies which can result from properly coordinating packing and packaging with materials handling are overlooked.

By MATTHEW W. POTTS

Materials Handling Consultant

PRODUCTION operations have been systematically studied in order to reduce production costs. The economies resulting from such studies usually end however when the product reaches the shipping department. Too little attention is given to the costs of moving a product through the various physical phases of distribution. One of these phases is packaging. Its costs are made up of several factors. These include handling the product during the packaging operation, package design and construction, materials used in the packing crate or case, handling the package from the packing line to the warehouse, and from the warehouse to the common carrier Frequently a packing case must be specially constructed in order to protect products. When special construction is required a thorough study should be made of the packaging methods with a view to package protection. The cost of packaging often is too high because little thought has been given to the cost of handling the product into the crate or case and then handling the package through the stages of warehousing and shipping.

In a recent issue of DISTRIBUTION AGE, we discussed at considerable length the desirability of using 2-in. strips on the bottom of packing cases used for shipping refrigerators, stoves, deep-freeze coolers, and similar products in order to facilitate handling by fork trucks. Shipping cases can be adapted, through design and through structural modification, to modern materials handling within the plant shipping room and in all the phases of distribution. Packages, too frequently, do not hold together long enough to reach their destination. Part of this failure is due to the use of improper materials; more of it is due to the fact that shipping rooms are not always equipped with adequate facilities for good packaging. Too often proper materials-handling equipment is lacking.

Frequently it is better to make up the crate or box and then lift the material into it than to build the box, which often lacks proper bracing, nailing, clinching, etc., around the material. This latter practice often results from inadequate headroom and from the lack of proper handling facilities. In some instances, such containers are broken even before they leave a manufacturer's shipping department. The use of roller conveyors, overhead electric hoists, light duty monorail cranes, portable cranes, etc. will greatly facilitate handlings in shipping departments and eliminate much expensive manual rehandling. The use of such equipment also will save time in the loading of merchandise into trucks or cars.

In packing and shipping de-

(*Continued on Page* 73)

PALLET STACKING MOTO-TRUC

DEPENDABLE POWER

CUT MATERIALS HANDLING COSTS
MOVE MORE GOODS WITH SAFETY

You can do both... and *MORE*... when you use EXIDE-IRONCLAD POWERED Electric Trucks

Wherever goods are lifted, hauled and stacked, efficient battery electric trucks and Exide-Ironclad power are effecting important economies all along the line. They do more work per man per hour and at less cost. They do it with greater ease and safety. And they maintain a steady pace straight through to the end of every shift.

Exide-Ironclad Batteries have the high power ability, the high maintained voltage and the high capacity that materials handling demands. You can always count on Exide-Ironclad Batteries for dependability, long-life and ease of maintenance.

Write us for a FREE copy of Exide-Ironclad Topics which contains "Case Studies" of materials handling problems. It tells how to cut handling costs up to 50% . . . covers latest developments in handling materials from receiving to shipping.

THE ELECTRIC STORAGE BATTERY COMPANY
Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

PALLET STACKING MOTO-TRUC

GEORGE W. MALONE

The Flexible Tariff Act of 1930

Growing apprehension in Washington respecting the outcome of the Geneva Reciprocal Trade Agreements Conference is focusing the attention of Congress on Senator Malone's proposal that we make operative the Flexible Tariff Act of 1930 . . . This Act, it is said, enables the President to adjust the tariff structure to wage and living conditions abroad to obviate the possibility of "dumping".

By ARNOLD KRUCKMAN
Washington Correspondent

THERE is a group in the Senate, mostly newcomers, under the leadership of Senator George W. Malone, Republican, of Nevada, who believes a *flexible tariff* should take the place of reciprocal trade agreements, and similar tariff arrangements, with foreign nations. Reciprocal trade agreements have been under discussion among 18 nations at Geneva, Switzerland, since April 14. Undersecretary of State William L. Clayton, the Texan, who has frequently been called the greatest salesman in the world, heads the American delegation of 125 officials. The reciprocal trade agreements formula is so unpopular with both the Senate and the House Republican majority that the House Ways and Means Committee plans to hold hearings on the subject during the entire period the Geneva Conference is in session. The hearings are definitely announced as designed to place a curb on the American negotiators. The Republican members plan to send a delegation to Geneva to keep more closely in touch with a proceeding which they fear may surrender more concessions than they think may be justified.

The Republicans would like to rescind the law validating Executive authority to make what amounts to a treaty. They hold the reciprocal trade agreements law is unconstitutional since it violates the provisions which require that all treaties must be made by and with the consent of the Congress. They have the necessary majority to repeal the law, but they realize that they do not have the necessary votes to override the veto which would unquestionably come from the White House. This situation, typical of a number of similar circumstances which condition the relation of Congress and the President, tends to focus the attention of Republican members on the potentialities of the flexible tariff.

Senator Malone means that tariffs literally should be flexible, in the sense that they should be adjustable to the various conditions and circumstances that exist among the nations whose products are imported into the United States, and to whom we export our goods and services. Malone recently, in a notable speech in the Senate on the proposed loans to Greece and Turkey, defined the purpose of the flexible tariff in these words: "The objective of the American people is perpetual peace with all nations raised to our standard of living."

In a more restricted sense, it is held that trade agreements should give (1) American business more opportunity for international trade; (2) assurance of reasonable access to all world markets; (3) assurance that American business

(*Continued on Page* 76)

the biggest, busiest, AIRFREIGHT NETWORK

BIGGEST because—TWA publishes joint airfreight rates with six other United States airlines.

This makes it possible for you to fly a shipment via TWA, or any other participating airline, and rest assured that it will travel—at one rate and on one through-bill—to any destination along this country-wide network, largest in the land.

BUSIEST because—All TWA flights, passenger planes as well as Skyfreighters, carry airfreight. This is also true of every airline in the TWA network. Thus, every flight, on every airline, going to every destination shown above, carries airfreight.

Mr. Traffic Manager, you simply can't beat **TWA Airfreight** for top coverage and high-frequency service!

TWA AIR·FREIGHT

Put wings on your letter for a nickel

TWA's The Way To Ship—For Airfreight Flies On Every Trip

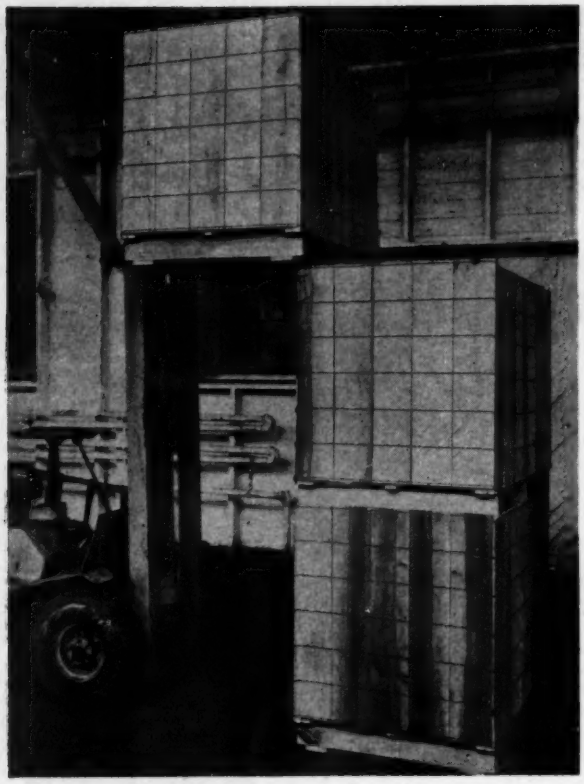


Fig. 1

Fig. 2

Have You Seen the Pallet Box?

AMONG recent developments in the materials handling field is the Generalift "B"—style pallet box.

The pallet box is composed of two separate parts. One of these is a specially constructed hardwood pallet and the second is a wirebound wrap-around mat. When these two are combined, they form a pallet box. Construction of the pallet and the method of attaching the wirebound mat are patented.

Note in Fig. 1 that the pallet is similar in construction to an ordinary pallet. The top decking of the pallet, which is the floor of the pallet box, is of solid wood. This not only gives added strength and longer life to the product, but also provides an adequate base when the pallet box is used to ship small parts or carton goods.

A wood wirebound mat is used for the sides of the box. This mat is manufactured in one piece and is wrapped around the pallet in assembly. It may be removed from the pallet and knocked down for shipment when the box is empty.

Details of the assemblying procedure are shown in Fig. 2. The interlocking principle of the Generalift pallet box provides a simple and speedy method of putting the two sections together. This permits the wirebound mat to be applied without the use of nails.

After all sides of the mat are in position, the Rockfastener loops at each end of the mat are closed and the two sections are locked firmly into position. (Fig. 3)

When used with a fork truck, the pallet box may be tiered two, three or four high. (Fig. 4.)

Fig. 3

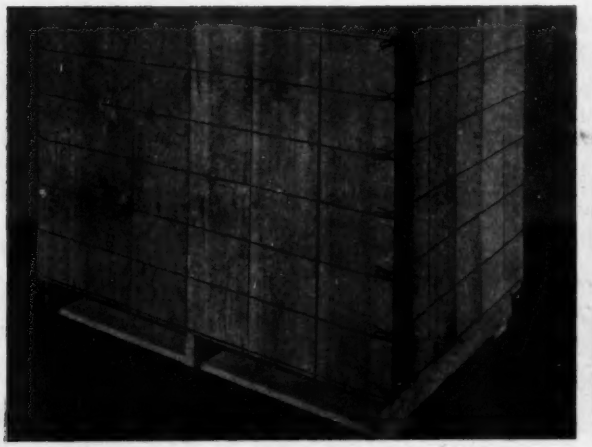
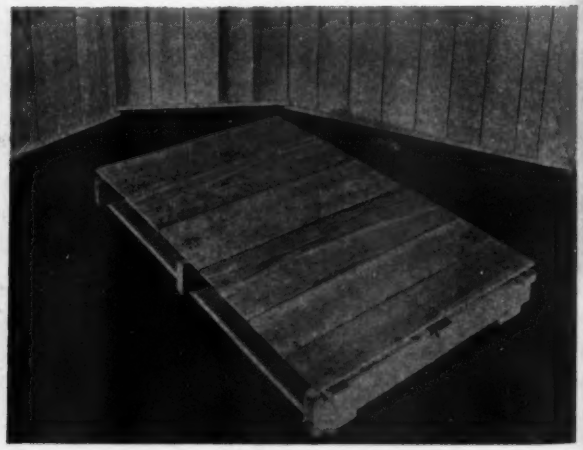


Fig. 4



YOU CAN SERVE YOUR CUSTOMERS BETTER

with a truck like this!

Here's a picture of a *"Job-Rated"* truck . . . a truck that fits its job.

Take a good look at it!

This truck has exactly the right one of 7 Dodge *"Job-Rated"* engines to provide the pulling power the owner needs, with the economy he wants.

It has exactly the right one of 5 Dodge *"Job-Rated"* clutches, 4 transmissions, 18 rear axles . . . the right units throughout . . . for "top" performance with the loads it carries, over the roads it travels. It is completely *"Job-Rated"* to fit its job . . . to last longer, and for dependable, money-saving operation.

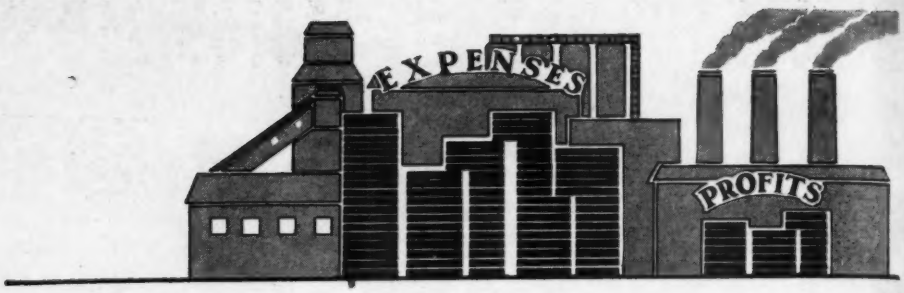
YOU, too, can buy a truck that will fit *your* job . . . giving you better performance at lower cost.

To get such a truck, see your Dodge dealer. He will analyze your needs. He will recommend the right truck. He will serve you well . . . including dependable truck service whenever you need it. . . . See or call him today.

DODGE

ONLY DODGE BUILDS *"Job-Rated"* TRUCKS

Fit the Job . . . Last Longer!



Distribution Cost Analysis

Part 6

Effective analysis of excesses of expense over standard or budgeted amounts offers a fertile field for expense reduction and profit improvement not only in the active operating function of sales promotion, physical handling, delivery, order routine, and accounting, but also in the more static functions of investment, storage and reimbursement.

By L. M. NICHOLS
Member
Controller's Institute of America

WHEN THE current report comparing actual distributing expenses by expense item classifications with the budgeted amounts is available, the controller promptly should furnish management with an analysis of the reasons for any excesses over the budgeted amounts for the cumulative period.

We will assume first that the budgeted amounts for the so-called fixed expenses have been set as recommended in a previous article, taking into account the budgeted level of sales volume if markedly above or below normal capacity level.

Under these conditions there should not be any substantial excesses or savings compared with budgeted amounts of fixed expenses except for items not anticipated as such in the budget—for example: the addition of executive personnel not contemplated in the budget or the death or resignation of an executive not replaced, or replaced by one of different salary rate; additional space acquired or space released by reason of the actual volume of business being abnormally above or below the budgeted rate; unexpected or emergency replacement of plant or equipment affecting depreciation, etc.

In that type of expenses which should vary by sales volume and which are budgeted flexibly for each successive cumulative period based on actual sales volume, any variation from the budgeted expense amounts should be explainable by unbudgeted increases in the salary rates, unexpected increases in automobile, train, hotel, or other traveling expense item rates, changed economic conditions not anticipated in the budget affecting credit and collection expenses, and bad account losses in percentage to sales.

If not definitely explainable by some such uncontrollable causes, then obviously any expenses in excess of the flexible budgeted amounts in this class of expense items is due to poor supervision by the department head and ineffective action by the budget officer, who should have kept him currently informed and guided into the necessary prompt action in eliminating unwarranted excess expenses.

Similarly, in that group of expense items which should vary with physical volume of work and is flexibly budgeted for each successive cumulative period based on the actual volume of the kind of work used as a basis of the standard or budgeted expense allowance, an analysis of any excess expenses over budgeted amounts is necessary. Unbudgeted changes in salary levels may account for the excess, or unexpected, changes in the prices of stationery and office supplies, or in telephone, telegraph, and postage rates.

If not so accounted for, the excesses probably are due to poor supervision and expense control. Investigation may disclose work production in office or warehouse below the reasonable standards per hour or eight hour working day developed for the kinds of work listed in a previous article under

(*Continued on Page* 58)

BEFORE YOU BUY ANY MOTORIZED HANDTRUCK

Only Transporter GIVES ALL THESE MONEY-SAVING FEATURES!

1. **ONLY motorized hand truck that comes COMPLETE with Standard BATTERY for full day's operation.**
   Benefit: No extra price to pay for battery. Low overall cost of installation including charger. Compare these prices.
2. **THE motorized hand truck whose battery can be charged from a REGULAR ELECTRIC LIGHT SOCKET.**
   Benefit: No installation cost for charging equipment . . . No power line needed. Fully portable . . . charge your Transporter where it works.
3. **THE motorized hand Truck equipped with EITHER electric lift or foot lift. (Optional).**
   Benefit: The right unit for the right application.
4. **Operates at lower cost than ANY OTHER motorized hand truck.**
   Benefit: Pays for itself quicker than any other motorized hand truck.
5. **No complicated control system to manipulate! Easy two-button Thumb-Tip control with foot lift—3 buttons with electric lift. No controls in handle grips.**
   Benefit: Simple one hand, one motion operation, with either hand.
6. **Operator controlled lowering speed.**
   Benefit: Load can be lowered at desired speed; fragile or heavy goods.
7. **Positive Mechanical Brake.**
   Benefit: SAFETY. Most effective brake on any motorized hand truck. Will stop and hold on any incline truck will climb, by raising or lowering handle.
8. **Positive Dead-Man Control.**
   Benefit: SAFETY. When hand is taken off steering handle, it flips back, Transporter stops dead, and current is shut off in two places.
9. **Only motorized hand truck and battery charger that carry the Underwriters Laboratory Seal.**
   Benefit: SAFETY. Neither truck nor charger is a fire hazard.
10. **No grounded circuits.**
    Benefit: SAFETY. Operators need not fear electric shocks.
11. **Light weight, yet engineered and built for full capacity loads.**
    Benefit: More Power per weight ratio than any other motorized hand truck. No oversized battery to carry.
12. **Maximum accessibility to all operating parts.**
    Benefit: All operating parts can be immediately exposed for inspection, adjusting and lubrication. No boxed-in construction.
13. **Steers through more than 180 degrees.**
    Benefit: Easily maneuverable in narrow aisles, close quarters.
14. **World's MOST EFFICIENT—proved by thousands of Transporters now in use in every industry—many more than ALL OTHER motorized hand trucks COMBINED!**
    Benefit: To labor for lightening life's loads—and to management for CUTTING HANDLING COSTS IN HALF!

BUY ON A "SHOW-ME" BASIS OF MONEY-SAVING ADVANTAGES!

Transporter
A PRODUCT OF AUTOMATIC
Lightens LIFE'S LOADS

ONLY AUTOMATIC MAKES THE TRANSPORTER

MANUFACTURERS OF THE FAMOUS TRANSPORTERS, TRANSTACKERS AND SKYLIFT ELECTRIC TRUCKS

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AUTOMATIC TRANSPORTATION COMPANY
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- ☐ Please send the "SHOW-ME" PLAN to check motorized hand truck values.
- ☐ Have an ATCO Specialist make a free survey of my material handling costs.
- ☐ Schedule me for a showing of ATCO'S new film "Pay Loads Pay Off."

Company Name.....
By.....
Street Address.....
City.....State.....

Mechanized Handling of Metals

The distributor, who channels merchandise into wholesale and retail outlets, is a vital link between supply and demand. Mechanized handling, careful packing, and prompt delivery can build good will and make for more efficient and economical distribution.

By W. N. PEDDER

Traffic Manager
Ducommun Metals & Supply Co.

THE distributor is a vital link between supply and demand. He serves as a shortcut to the procurement of essential items whether in or out of his inventory. Much has been said and written relative to transportation. However, another important phase in the distributive process is that stage in which merchandise received from distant points is channelled into wholesale and retail outlets. It is at this point that the mechanics of distribution must ensure prompt service and delivery of merchandise in good condition. In this connection, it will be interesting to study the operations of one of the oldest and largest distributing houses in Los Angeles.

Let us follow this form's procedure through the various distributive processes. An order for 10 sheets, 22 ga. stainless steel, let us say, has been received by the shipping department. When this order was received an invoice was prepared and the original forwarded to the shipping room. Simultaneously, a copy, which is referred to as the "work sheet" or "floor sheet," was forwarded via a tube system to the stock department which will fill the order. The required material is taken from stock by the warehouseman preparatory to packing. Stainless steel is a valuable commodity. It has a highly polished finish which needs protection so paper wrapping must be used. The stainless steel sheets will bend and kink, therefore the crating must be strong enough to afford protection and yet not so heavy as to unduly add to the shipping weight. In executing the order, a checker checks off the the material on the "work sheet," initialing it as a means of identification. Having been crated, properly marked and labelled, the shipment is then moved by an electrically operated

(*Continued on Page* 95)

FIRE PREVENTION EXPERTS
recommend
CENTRAL STATION-SUPERVISED
FIRE DETECTING AND ALARM SYSTEMS

From report of South-Eastern Underwriters Association on Hotel Winecoff fire

Where a modern, trained fire department exists, quick extinguishment of a fire may be expected if notification is given of the fire in its early stage. The installation of an approved *automatic* fire alarm system, transmitting an alarm to the fire department, *preferably through a central supervising company is desirable.*

From report of Cook County Inspection Bureau on Hotel La Salle fire

The tragic results of this fire were brought about by the absence of means for fire detection and alarm. Every hotel should be provided with an approved alarm system. The prompt transmission of alarms to the fire department can best be secured *by means of Central Station Supervisory Service.*

From report of International Association of Fire Chiefs on fire protection for hotels

Requirements shall include frequent and regular inspection and test of all above mentioned systems. Proper supervision and maintenance of such protective systems are essential to reliable operation, and it shall be required that this procedure and the assurance of prompt transmission of alarms to the fire department can best be obtained by means of *Central Station Supervisory Service* wherever it is available.

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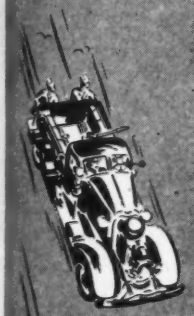

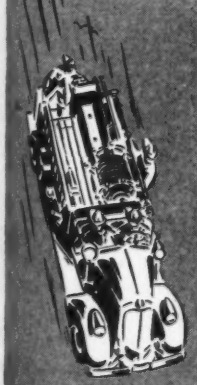

Reports of fire protection experts who investigated the La Salle, Canfield and Winecoff hotel disasters point out that in all these fires the tragically fatal consequences were largely the result of belated discovery or delayed alarm, and stress the importance of fire detecting and alarm systems, *supervised and maintained through a central station agency.*

For hotels and all types of commercial and industrial properties, ADT provides Fire Protection Services including automatic and manual fire alarm systems, installed, supervised, inspected, tested and maintained through ADT Central Stations located in all principal cities of the United States. In more than 350 municipalities these systems are available with Central Station connection; elsewhere they are furnished as local or direct-to-fire department systems with ADT supervision, inspection, test and maintenance service.

Whatever the type of system, ADT provides periodic inspections, systematic tests and complete maintenance by an organization of trained and experienced protection personnel, who provide the specialized attention required to assure proper and effective operation when an emergency arises.

AERO AUTOMATIC FIRE DETECTING AND ALARM SERVICE
SPRINKLER SUPERVISORY AND WATERFLOW ALARM SERVICE
MANUAL FIRE ALARM SERVICE
WATCHMAN'S REPORTING SERVICE

For complete information write or phone the ADT Office listed in your telephone directory or address our New York Executive Offices.

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ADT

Electric Protection Services
AGAINST FIRE · BURGLARY · HOLDUP
A NATION-WIDE ORGANIZATION

Freight Forwarders and the CAB

(*Continued from Page* 36)

for an average 10 lb. shipment to Chicago and $7.59 for an average 10 lb. shipment to San Francisco would seem to give the forwarders ample margin to operate on. On an average 50 lb. shipment there is a saving of almost $3 to Chicago and more than $5 to Los Angeles so that even here the forwarder would appear to have more than enough to cover the cost of his handling the shipments, place him in a position to make a profit, and pass a saving on to shippers.

Air freight forwarding as such is a new activity and there is little data showing costs of operation. It has developed with the rise of independent air freight carriers since the war, and the forwarders' usefulness to these operators has been in the fact that they have served to some extent in lieu of the costly ground traffic solicitation organization maintained by the airlines. The lack of operating data of their own has, therefore, forced the forwarders to fall back on cost data pertaining to package consolidation made available by comparable agencies. The CAB is interested in knowing that costs of consolidation will be less than the spread between small package and large volume air freight rates. It has been shown, for example, that the consolidation costs of Railway Express Agency, including expedited physical handling, accounting, advertising, insurance and loss and damage, has varied from 74c. to 89c. per air express shipment from 1933 to 1941. This is much less than the spread shown in Table I. Freight forwarders also have pointed out that while their operations might reduce per-ton revenues for the airlines, they would, at the same time, reduce total airline costs and expand volume. In support of such a contention it is pointed out that REA figures indicate clerical costs alone that can be saved by consolidation of shipments are substantial, probably amounting to as much as $27 on the consolidation of 300 ten lb. shipments into one 3,000 lb. shipment.

TABLE I

Operating Margin For Air Freight Forwarders *

Charge for one 10-lb. shipment via air freight from New York to Chicago (airport to airport)	$ 3.15†
Charge for pick-up and delivery of 10-lb. shipment	1.50
Total	4.65
Charge for 300 10-lb. shipments via air freight from New York to Chicago (includes pick-up and delivery)	1395.00
Charge for 3000-lb. shipment via air freight (made up of shipments weighing not more than 25 lb. each) from airport to airport @ 8.56 per hundred weight from New York to Chicago	256.80
Possible margin for air freight forwarder	1148.20
Average margin per shipment	3.82
Charge for one 10-lb. shipment via air freight from New York to San Francisco (airport to airport)	$ 8.78†
Charge for pick-up and delivery of 10-lb. shipment	1.50
Total	10.28
Charge for 300 10-lb. shipments via air freight from New York to San Francisco (includes pick-up and delivery)	3084.00
Charge for 3000-lb. shipment via air freight (made up of shipments weighing not more than 25 lb. each) from airport to airport @ 26.90 per hundred weight, New York to San Francisco	807.00
Possible margin for air freight forwarder	2277.00
Average margin per shipment	7.59
Charge for one 50-lb. shipment via air freight from New York to Chicago (airport to airport)	5.80‡
Charge for pick-up and delivery	1.50
Total	7.30
Charge for 60 50-lb. shipments via air freight from New York to Chicago (includes pick up and delivery)	438.00
Charge for 3000-lb. shipment via air freight (made up of shipments weighing not more than 25 lb. each airport to airport) @ 8.56 per hundred weight from New York to Chicago	256.80
Possible margin for air freight forwarders	171.20
Average margin per shipment	3.00
Charge for one 50-lb. shipment via air freight from New York to Los Angeles (airport to airport)	$ 17.06†
Charge for pick-up and delivery	1.65
Total	18.71
Charge for sixty 50-lb. shipments via air freight from New York to Los Angeles (includes pick-up and delivery)	1122.60
Charge for 3000-lb. shipment via air freight (made up of shipments weighing not more than 25 lb. each airport to airport) @ $26.90 per hundred weight from New York to Los Angeles	807.00
Possible margin for air freight forwarder	315.40
Average margin per shipment	5.00

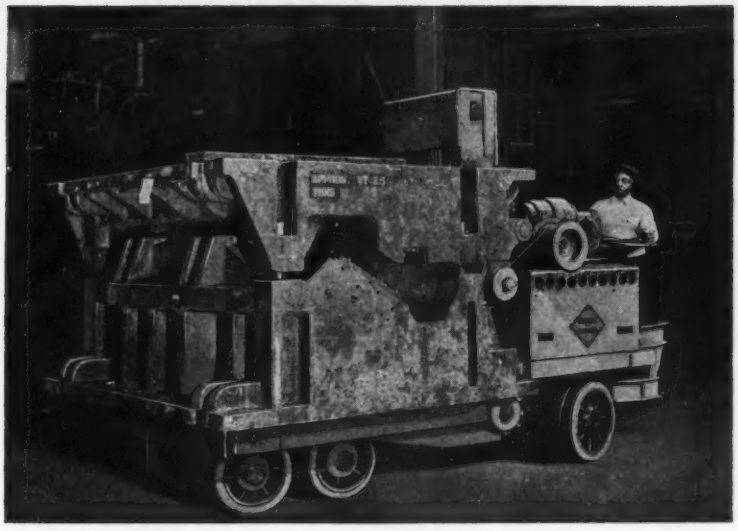
* From exhibit PNYA 4, CAB Docket No. 681 et al.
† United Air Lines—Air Freight Tariff No. 1, CAB No. AF-1, ATB No. AF-1.
‡ Transcontinental and Western Air, Inc., Airfreight Tariff No. 2A, CAB No. 7 Transcontinental and Western Air, Inc., Local and Joint pick-up and delivery Tariff No. 1A, CAB No. 8.

In connection with ground transportation facilities forwarders not only have been able to save shippers money on small packages but they have been able to render them faster service. For example, from New York to Seattle forwarders often have been able to cut transit time by three days over l.c.l. From Boston to Kansas City forwarders have been able to save two days in transit. Whether similar time savings also will be a factor in air transportaton is still an unanswered question, although some forwarders think it will be. All air freight will be geared to overnight delivery from and to all points in the United States. There will not be the difference in speed that we have had on the railroads between ordinary l.c.l. and consolidated cars. In foreign air freight transportation, however, probably there will

(*Continued on Page* 72)

SUPER STRENGTH

Another Reason Why ELWELL-PARKERS are preferred!



THE "tank-tough" construction that characterizes Elwell-Parker trucks, tractors and cranes pays off in longer life and minimum maintenance costs. Here are a few reasons why so many Elwell-Parkers are "still going strong" after 20 years of service:

MODERN MATERIALS, PROPERLY PROCESSED—Elwell-Parker makes generous use of alloy steels — chrome, molybdenum and nickel — wherever greater wear is encountered. On vital parts, drop forgings are used more extensively than in the average truck. E-P heat treating is thorough—often involving double or triple firing.

EXTRA RUGGED FRAMES—They have the true ring of one solid piece because they are durably welded and riveted into a unit of heavy gauge plate by Elwell-Parker craftsmen.

STRONGER MOTORS—They are E-P built, Class B type, practically indestructible and fire proof. Because these motors have more copper, greater commutator area, plus more brushes than usual, they easily absorb all the power that can be delivered to them.

UNIQUE ENGINEERING—Because Elwell-Parker engineers have had longer experience, they fully recognize the abuse and overload factor. Consequently, you find *surplus* strength wherever needed; for example: double stabilizing tilt racks, overload slip clutches, no fuses, and a new, high-speed travel controller.

For further evidence regarding the strength of these trucks, plus their proper application to your specific needs, call in the nearest E-P man. The Elwell-Parker Electric Co., 4110 St. Clair Avenue, Cleveland 14, Ohio.

ELWELL-PARKER *Established 1893*

POWER INDUSTRIAL TRUCKS

Typical "Avocado Country" in Southern California.

How Avacados

By PAUL O. HELIN

Traffic Manager
Calavo Growers of California

THE avocado, native of tropical America, has become the base for a new industry in California within the past 25 years. Originally a hobby enterprise, the fruit was planted in a commercial way in the early 1920's. In 1924 a small group of growers organized their own marketing cooperative, now known as Calavo Growers of California. In its first year of operation Calavo marketed 13,757 flats of avocados. By 1926 annual production had more than doubled. Traffic history was written on Dec. 17, 1926, when the first carload of avocados was shipped from Los Angeles.

Gradual expansion of Calavo's district and branch sales structure followed during the 1930's. There are now 34 such offices, with nationwide distribution from San Diego to Boston and from Seattle to Atlanta. In 1946 Calavo marketed 2,373,825 flats of avocados—nearly 200 times the 1924 production. Trend of future production is upward.

Avocados are grown in the Southern California coastal area, from Santa Barbara to the Mexican border. Fruit is concentrated at pick-up stations, then hauled by truck to the packinghouses. Speedy handling between picking and packing is essential. Packinghouse procedures have been designed to insure uniformity of pack, dependable quality, and the best possible arrival condition at destination market. All of these spell "consumer satisfaction."

Grading of fruit is done through exacting standards, involving maturity (determined by laboratory tests), appearance, size and shape. The trademark name "Calavo" is mechanically stamped on the fruit, which then is automatically sized by weight and deposited in packing bins. Fruits are packed in the Calavo "flat," a container which has since been widely adopted by other agricultural industries. It holds from 12 to 42 fruits, is a compact and readily handled package, strong enough to withstand stacking. Use of excelsior above, below, and between the individual fruit, affords protection in transit. The pack is attractive and can be used for display on the fruit stand.

Packinghouse operations are planned to get the fruit from the picking boxes into packed flats with the greatest possible speed. After lidding, the packed boxes go directly to cooler rooms for subsequent shipment by truck, or directly in refrigerator cars for precooling before shipment.

The traffic department has all of the usual "traffic problems" plus the specialized ones associated with handling perishable fruit. Practically speaking, everything Calavo has learned has been through its own experience, since no one else in the United States ships avo-

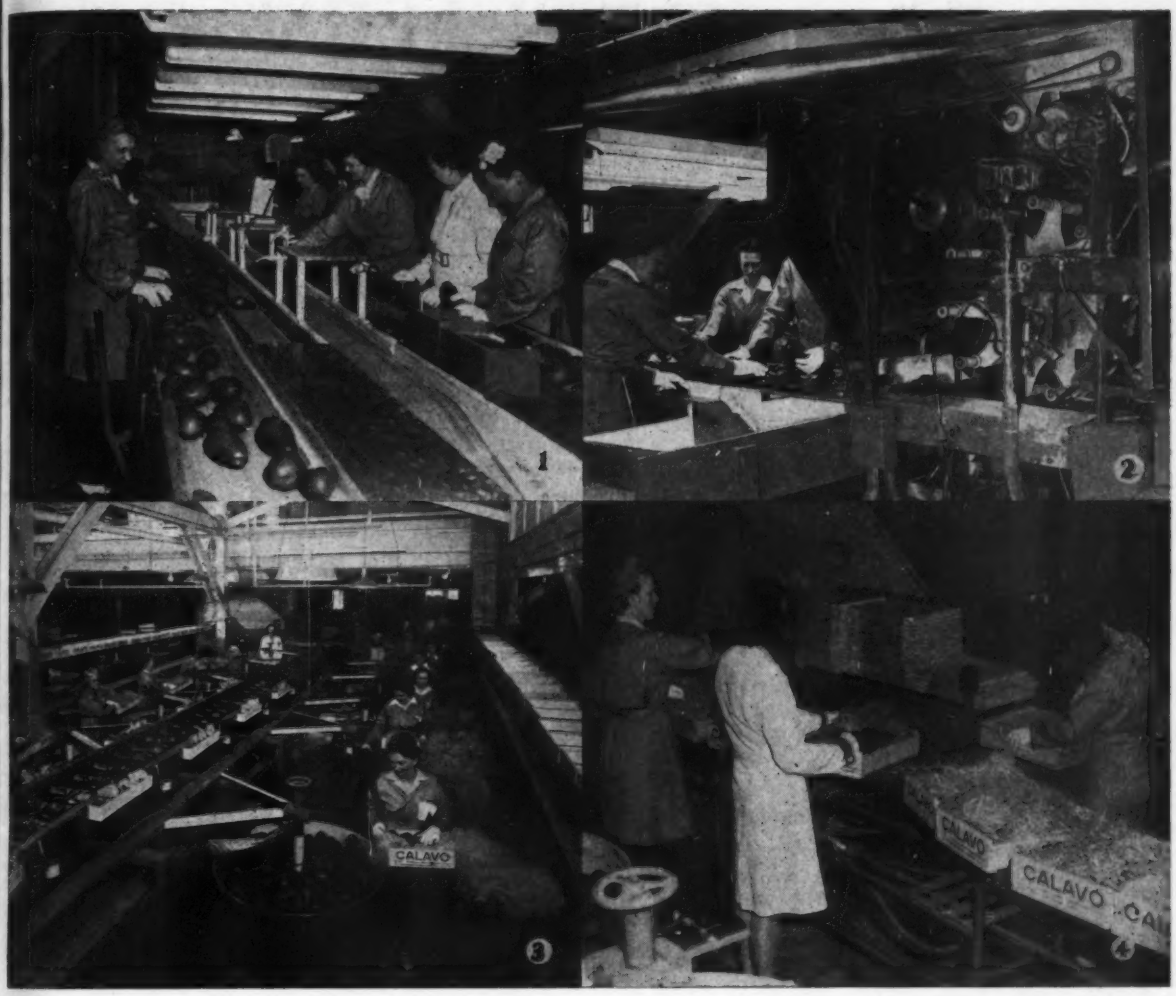


Fig. 1—Grading. Fig. 2—Branding. Fig. 3—Packing. Fig. 4—Inspecting.

Are Packed and Shipped

Better packing and shipping practices mean better arrivals. Better arrivals mean greater customer satisfaction. Greater customer satisfaction means more profits to the producer.

cados on the same scale. Production is year-around in California, with heaviest movement from December through June. At the height of the season, seven rail cars per day is not uncommon, in addition to large-volume movement by truck.

Shipping schedules are coordinated with packing schedules. These dovetail with carefully planned and closely followed picking schedules which are influenced by a number of factors—fruit maturity, weather conditions (both in the growing areas and in consuming markets), and sales. Distribution is based on the policy of getting the greatest total return for the fruit available, while building increasing demand for larger production in the future. The successful marketing of this perishable fruit depends upon a very delicate balance between supply and demand in all of the markets across the country. Day-to-day knowledge of sales progress at the various district and branch offices determine the volume of shipments to each area.

The Giannini Foundation of the University of California made a study of Calavo operations. It was published as Bulletin 539, *Sales*

(*Continued on Page* 94)

Primer of Freight Rates

(*Continued from Page* 35)

which is proposed to be established, modified, or abolished. They are referred to the proper traffic committees of the associations for their study and recommendations. Shippers or carriers who are interested in the rates may be accorded a hearing, provided that notice is given to the chairman of the association within the period of time prescribed by the association's rules.

Shippers generally are notified by the publication of the association's docket bulletins.

If the representatives of the carriers comprising the committees of the associations agree to the proposed changes in the proposed rates, charges, rules, or regulations, either with or without modifications of the original proposals, recommendation advices are issued by and on behalf of the member carriers. The recommendation advices are numbered serially so that carriers may be sure they have received all of them in order. If the committee to which the proposal has been assigned fails to agree, the matter may be appealed to a superior committee composed of higher traffic officers of the carriers. In some cases there are several appeal committees. Final appeal may be made to the executive traffic committee, composed of the chief traffic officers of the carriers.

Proposals which affect carriers in another territorial association are referred, with the recommendations of the committee of the association with which the proposal was initiated, for appropriate action by the other association.

If the proposal is approved by the single association or several associations interested in it, the recommendation advice enables the carriers to make appropriate arrangements for the rates, charges, rules, or regulations to be published and filed as required by law. This may be done either by the tariff bureaus of the individual carriers, or by the tariff publishing agent of the traffic association, who must be authorized to publish and file the rates or other matter by authorization of the individual carriers.

It should be noted that the rate action is taken by the individual carriers. It is they who make the rates, not the association. If any carrier wishes to establish or maintain a rate, charge, rule, or regulation contrary to the recommendation of the other carriers, or if it wishes not to establish or maintain a rate, charge, rule, or regulation recommended by all the other carriers, it may do so by taking independent action and notifying the other carriers of its intention to do so. This is known as independent notice. The carrier may publish the rate it desires to use either in its own tariff or instruct the tariff publishing agent to publish the rate for its account in the joint tariff published and filed on behalf of all the carriers members of the association by the joint tariff agent. If the carrier does not wish to participate in any rate published for other member carriers in the agency tariff, it may instruct the tariff agent to indicate in the tariff that the rate is not operative in connection with shipments via that carrier.

The other carriers have the right, individually or jointly through the association, to ask for the suspension and investigation of the rate filed by the carrier through its independent action. The Interstate Commerce Commission, after hearing at which all parties interested have the right to appear and be heard, must decide upon the lawfulness of the rate, charge, rule, or regulation under investigation.

In cases where carriers decline to establish rates requested by shippers or modify rates despite the protests of shippers, the latter may file complaints either upon the Commission's formal or informal dockets attacking the lawfulness of the action of the carriers.

Rate-making is a three-party action, in which the carriers, the shippers, and the public generally through the regulatory bodies such as the Interstate Commerce Commission, have privileges and responsibilities, delineated by the laws which govern carriers as public utilities.

It is not feasible in this general survey of the economic background of freight rates and charges to distinguish all of the types of freight rates. They may be divided, first, into the rates for transportation or line-haul service, and, second, the charges for auxiliary, accessorial, or ancillary services.

Line-haul or transportation services may be for local services

over the line of one carrier, or for joint service over the line of two or more carriers.

These rates may be through rates, proportional or basing rates, reshipping, or combination rates.

They may be (1) class rates applicable upon classes of traffic specified in the classification; (2) exceptions to the classification—lower classes or percentages of class rates published in exception to the classification; (3) commodity rates, either on specific commodities or on groups of commodities more or less related to each other; or (4) all-freight or all-commodity rates in which the same rates are made upon all commodities without regard to their classification, in carload, truckload, containerload, or train-load or shipload lots.

The rates of whatever type may be made upon various bases: (1) point-to-point or station-to-station; (2) mileage or distance blocks (3) group; (4) zone; or (5) territorial block.

The rates may be made upon: (1) less than carload or less than truckload; (2) carload or truckload or volume; (3) multiple carload or trainload or cargo; or (4) any quantity basis.

Accessorial service charges may be described as those for supplemental services, the charges for what may either be added to the line-haul or transportation service rates, or absorbed in them. These charges may be divided into two major subdivisions: (1) special service charges, and (2) terminal service charges.

Special service charges include: (1) transit charges or fees for fabrication-in-transit, milling-in-transit, or storage-in-transit; (2) reconsignment and diversion charges; (3) peddler car service; (4) charges for stop-off services to partially unload or load; (5) perishable protective service charges, such as refrigeration, ventilation, or heating; (6) back or out-of-route haul charges; and (7) charges for special movements.

Terminal service charges include those for: (1) the types of switching, including intra-termi-

(*Continued on Page* 80)

The shipment (left) should have been boxed. Packages in transit receive rough treatment. Note (right) precarious stacking and damaged wrapping of one package.

How Much Protection?

Men concerned with the distribution of goods should know how to select the different wraps, coatings, strappings, bracings, and markings which protect and direct the merchandise itself.

By CHARLES L. SAPERSTEIN

Packaging Consultant

FEW traffic men have stopped to count how many layers of protection may go into a single item of cargo. Naturally the eye sees and grasps the outer container and from what is seen, judgments are formed; "this is a good shipment, this is not." It will be a surprise to many, to examine a few items constantly being transported or handled, and count the number of containers, wraps, coatings of preservative, tying or strapping, labelling or other markings which protect the merchandise itself.

To many it will seem almost incredible that the simple stick of gum has at least seven—and perhaps nine—protective wrappings for the domestic trade alone. The same merchandise may be further packed for long haulage, export or storage with from three to five more protective "skins."

Where multiple protection is given, it can be reasonably presumed there is good and excellent reason for the adoption of each wrap and that the omission or faulty use of any one can lead to deterioration, damage or shipping failure.

In the instance of a stick of gum, there is first a protective layer of a dusting powder to keep the product itself from growing stale. Then there is an inner wrap, sometimes made up of two sheets, one of paper and one of foil. This inner wrap is secured by single stick wrap-around identification label. Five such units receive still another wrapper which forms the conventional retail selling unit. Still another skin is applied—the cellophane wrap. We have five or six layers of protection, and we have only reached the consumer package.

Consumer packages are nested in small retailer size boxes which often double as counter displays or self-serving sales units. If these are to be stored by jobbers or distributors, the retail unit often will be given a protective paper wrap with proper outside identification. A designated quantity of retail counter display units are packed in a corrugated shipping carton, the case usually seen in domestic distribution.

Up to nine "skins!" And this is no exception. Razor blades, retail packages of ink; toilet soap; wearing apparel; endless drug and food products—easily pass through from six to nine steps of packaging to reach the familiar unit in distribution.

Further steps are necessary for greater protection. In export shipments, there usually are measures taken to water-proof the wholesale size carton or to enclose several of units in a single waterproof bag liner. After this comes the export wooden case or crate. Beyond this

comes metal strapping. Next "skin of protection" is the stencilling of contents and destination, and of handling precautions such as "This Side Up" or "Center of Balance." Improper or incomplete markings may cause cargo to go astray or to be mishandled. If the export cargo is of the deck-load type, special varnishing or spraying sometimes is recommended to prevent the container from warping and boards from separating as a result of rough seas or inclement weather.

Other "skins" will be thought of by packaging experts. Not all shipments on the other hand require manifold packaging. Cast pipe may go without any packaging whatever; face brick may be transported with only a "skin" of straw scattered between layers to help reduce breakage from shock; poles for piling may require only two steps of protection—creosoting and chain-lashing to hold the load as a single unit.

The important reason for understanding the multiplicity of interior wraps and cartons in a complex shipping unit is that it is the combined preparation that makes for success or failure of the completed shipment. If, for example, cases of bottled ketchup had ill-fitting dividers so that end cells did not hold the bottles apart, there would be breakage even though the outer case might appear to be adequate.

These are some of the reasons why those concerned with distribution of goods should be trained to see beyond the outer "skin" of each shipping unit. It is well to know what other "skins" lay beneath the outer shell. It is well to know, also, what "skins" belong outside the shipping case itself. By this, we mean banding of proper size and gauge; we mean whatever external markings belong on the shipping unit, and we mean whatever shoring, blocking, tying, or whatever use of dunnage, tarpaulin-covering or staking is required.

Knowing and understanding the twelve basic "skins" of packing and crating is a prerequisite to expert packaging. They are summarized for ready reference on page 19.

Distribution Cost Analysis

(*Continued from Page* 46)

the heading "Basis for Distribution Expense Standards Used in Budgeting." This may not be wholly the employees' fault, in the form of inefficiency, loafing, silent sabotage, slowdown, or featherbedding. Management may be doing a poor job in the selection of employees fitted to do a particular job, in their training in the requirements of the job, including the effective use of office or warehouse machines, record keeping, or sequence of paper work. Inefficient office or warehouse layout of desks, files, records frequently referred to, or failure to maintain office and warehouse machines and equipment in good current working condition, may make a reasonable rate of clerical work and physical handling of material impossible until remedied.

Proper education and supervision of employees can also remedy any disclosed wasteful telephone, telegraph, and postage habits or practices by proper anticipation of needs by the use of airmail or overnight mail whenever possible.

Effective analysis of excesses of expense over standard or budgeted amounts offers a fertile field for expense reduction and profit improvement not only in the active operating functions of sales promotion, physical handling, delivery, order routine, and accounting, but also in the more static functions of investment, storage, and reimbursement.

When excess expenditures appear in the sales promotion group of expenses, compared with the flexible budget described in a previous article, it may, of course, be due to a drastic decline in volume of sales and gross margin. Sales personnel cannot be reduced safely unless there is evidence that it is a long term downward trend, or competitive position would be lost. Often advertising and sales "commotion" commitments have been made which cannot be cancelled or adjusted to the unexpected downward trend; sometimes, however, the excess expenditure is due merely to poor control of routing of salesmen and how they spend their time, sales traveling and entertainment expense, nonproductive advertising media, and particularly waste in the distribution and use of sales promotion material, and extravagant dealer meetings, exhibits, and conventions.

If the standards used as the basis for budgeting expenses involved in active operating functions like physical handling delivery, order routine, billing, and accounting have been based on the actual experience of the best 25 percent of a group of companies performing similar functions, any substantial variations from the flexible expense budget based on actual volume of work should be most critically examined. Test checks should be made of the volume of work output of the employees operating office and warehouse machines compared with the reasonable work standards per hour or per eight hour day, described in a previous article. Steps should be taken to train and instruct these employees more carefully and effectively and to select new employees who are better fitted for these machine jobs. Order routines, and billing and accounting forms and methods, should be reviewed and the proper sequence of operations examined to eliminate any waste motion or time in the handling of papers or materials. Relocation of desks, machines, and records to accomplish this may be indicated.

If delivery expense is excessive, better schedules of loading and variations in frequency of deliveries to insure a full load within a zone may be arranged. If this is not possible outside contract deliveries may be more economical than operating owned trucks with the company's own personnel.

Better arrangement and stacking of merchandise stocks, education of selectors in the location, appearance, and uses of merchandise items will improve the speed and accuracy of warehouse operations, as will the introduction of all the new materials handling equipment when adapted to the kind of operation and when economical.

Study of new packing or packaging materials and methods can greatly reduce expenses, eliminate losses due to improper packaging, boxing, or crating. Under the present "scarcity" condition, l.c.l. shipments in "mixed" cars subject merchandise to much greater hazard of damage in transit. This delays the ultimate delivery of scarce merchandise to impatient dealers and customers if it has to be returned to the factory or service station for repairs, to say nothing of the expense of such, and the needless use of scarce and overloaded transportation facilities on the three way trip.

Functional expenses pertaining to merchandise investment, storage, and reimbursement are often classified as fixed, static, and uncontrollable, without realizing how controllable factors may affect them. Inflated open orders on the factory or vendor, so common in these days of allocation, may become hazardous and financially and physically embarrassing if suddenly delivered in large quantities. This could cause an overstocked inventory just about as prices break downward, an exress investment involving precarious short-term borrowing, congestion in the warehouse and expensive outside storage space, heavier local personal property taxes and insurance, high pressured sales to dealers overextending their credit and causing future bad debt losses. Revised monthly delivery schedules on the factory, automatically cancelled if not delivered in the indieated month except to the extent reinstated, may be the part of wisdom right now.

When the distribution cost analysis of a commodity shows ex-

penses and profits at substantial variance from the flexible budget figures for that commodity, particularly if showing a loss, several effective courses of action may be taken.

Studies of effective measures taken by companies using distribution cost analysis have been made by the Department of Commerce and various trade associations.

If the commodity under consideration has shown a subnormal profit or a loss because of less than budgeted sales volume and gross margin and excess expense beyond that indicated by the flexible expense budget one or more of the following remedial actions may be taken:

1. Increase or decrease the price—the former if sales volume would not be substantially hurt, the latter if it would be raised more than enough to offset the decrease in gross margin per unit;

2. Increase or decrease the advertising and sales promotion expense after testing the effect on volume of sales and gross margin (affecting factory unit costs) in relation to the proposed variation in advertising expense;

3. Sell on consignment if this will stimulate dealer sales volume more than enough to offset expense of this additional investment;

4. Change the channels of distribution for the commodity if the present ones are found to be ineffective;

5. Repackage the commodity to reduce packing cost transportation, storage, and handling costs, and possible damage in transit;

6. Reduce the number of sizes, styles, qualities, and price grades, eliminating especially the obsolete or "dead" items. This will reduce storage, investment, and order filling expenses, and decrease the percent expense to sales in the items of advertising and sales promotion by having them concentrated on a smaller number of items sold in large volume;

7. Reduce the finished goods inventory in the factory and branch (or distributors') warehouses, with special emphasis on sales effort to move obsolete or slow-moving items. In reducing the inventory of standard current production items the effect of smaller production runs on factory unit costs must be taken into consideration.

When the analysis by customers shows a worse than budgeted result or a substantial loss, the characteristics of the sales made to that customer may indicate one or more of the following changes in selling action or policy:

(*Continued on Page* 112)

Why Wirebounds

A committee of packaging and shipping experts hung a blue ribbon on a wirebound crate in Chicago last April and thereby proclaimed it "Grand Champion" of all the shipping containers of whatever type or material entered in the first annual Protective Packaging Contest of the Industrial Packaging Engineers Assn. of America.

A green ribbon, signifying honorable mention, was hung by the same committee on another wirebound container. Thus wirebounds won two of the honors, including first prize, that were offered in a contest opened to and participated in by makers of shipping containers of all kinds.

The Wirebound Box Mfrs. Assn., whose members represent about 90 percent of the wirebound industry's volume, believes that the awarding of the blue ribbon to a wirebound crate bears out the contention of the industry that wirebounds are outstanding.

The association has conducted a ceaseless program of research, experimentation, and testing to improve wirebound designs and perfect wirebound containers for still other uses.

Principal advantages claimed for wirebound containers over other kinds include comparably low initial cost; relatively low weight with consequent savings in freight costs; thorough protection; versatility of design so each container is engineered for a specific job; sturdy and resilient construction so that the container, rather than its load, receives and absorbs the weight of stacking and the jars and jolts of shipping; low damage claims due to failure of the container; ease and economy of packing and unpacking; economy of space needed to store wirebounds before use; re-usability of the wirebound containers in many instances; ease of opening and closing wirebounds as the result of the various loop and twist wire closures now generally in use; and savings in shipping room labor.

The blue ribbon champion of the protective packaging contest embraces many of these factors. It is a wirebound crate entered in the contest by R. J. Bauer, assistant

(*Continued on Page* 93)

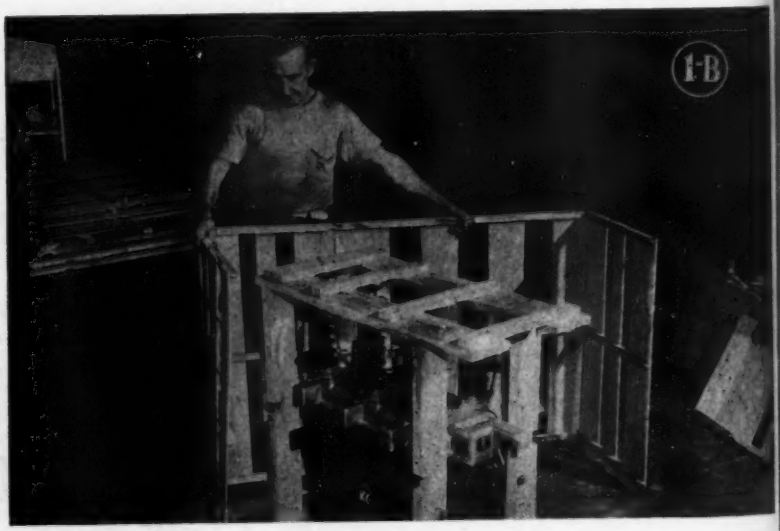


Fig. 1-A—Only one man is required to assemble the three parts of wirebound crate which won first prize in the protective packaging contest at recent Industrial Packaging Engineers convention.

Fig. 2-A—Prize crate, used by Seeger Refrigerator Co., Evansville, Ind., can accommodate refrigerator condenser unit directly from conveyor.

Fig. 3-A—Because each condenser unit is suspended from cleats inside the box, it is thoroughly guarded against damage from usual shipping shocks. Freight car illustrated is loaded with 252 units, each weighing 100 lb.

Fig. 1-B—This wirebound crate carries 275 lb. recloser made by Kyle Corp., Milwaukee, Wis. Note how recloser is bolted securely to wooden uprights.

Fig. 2-B—Since Kyle Corp. adopted this crate for 60 lb. recloser, shipping damages have been reduced considerably.

Fig. 1-C—This wirebound box is used by Homelight Corp., Port Chester, N. Y., to ship several types of pumps, blowers, and generators. Solid sides, top, and bottom of box keep out dust and dirt.

Fig. 2-C—Only one piece of wood bracing is required to prevent shifting of this Homelight unit.

Are Winners

A wirebound box was proclaimed champion in a contest involving all sorts of shipping containers at the Industrial Packaging Engineers convention in Chicago. This article reveals some of the reasons.

By L. S. BEALE

Secretary
Wirebound Box Mfrs. Assn.

Officials of International Harvester Co. have found that although product protection sometimes may be considered an added expense, the ultimate result is almost certain to be reduced overall cost.

Product Protection

By JOHN C. RANDALL

Special Correspondent

THE management of International Harvester Co., Chicago, believes that "product protection" is a more accurate term than "packaging," to describe one important part of their research program now under way.

This part chiefly is concerned with the development of practical ways and means to secure protection for the thousands of different unit product items which the company handles during the manufacture and shipping, the storage, and the final display and marketing of their goods.

The vastness of this program is emphasized by the fact that their full line of products—in the fields of heavy farm machinery and other farm utilities, and industrial tractors and trucks—includes a total of more than 300,000 different unit items. And about 30,000 of these items are in the usage class which requires the handling of not less than 750 units per year.

The development of the IHC product protection program has been complicated by the fact that products are made in eight different manufacturing divisions. Through the years, each of these divisions had used its own handling and packaging methods. During the war period there was a program of unification in company packaging, but this was carried on by a special coordinating commit-

HERE'S HOW International Harvester Co. packs two-unit tractor engines. Materials, nails, and banding are standardized. Container parts are reusable.

Fig. 1—End view of two-unit skid.

Fig. 2—Side view of skid.

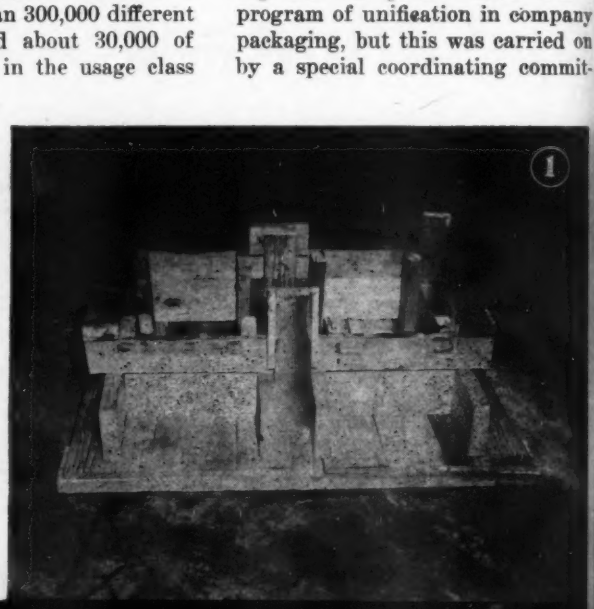
Fig. 3—Two engines on skid. Sides and ends of container are ready to assemble.

Fig. 4—Front view—note method used to block motors.

Fig. 5—One side and one end of container are in place.

Fig. 6—Box is assembled. Note top bracing.

Fig. 7—Container is completed. Standardized and reusable parts are held together with 4—12 gage griplock wire.



tee primarily from the viewpoint of wartime policing of packaged products.

The chief postwar motivation toward "product protection" came through the formation, in 1945, of the manufacturing research department. Stated objectives of this department are: "To study and conduct research concerning technical manufacturing activities of all kinds. This work will assure that we are kept in close touch with technical progress and all developments which flow from the efforts of scientists, engineers, and practical manufacturing men in this country and throughout the world. . . . To formulate standards of manufacturing practices to be followed by the various divisional departments."

At the first conference of this department, R. F. Weber, supervisor of materials handling and product protection, listed, as essential development steps: (1) The proved necessity for a standard. (2) Correlation of all existing data from plants, outside suppliers, research laboratories, and others. (3) Determination of best method or material, by laboratory and shipping tests, and in consultation with plant personnel. (4) Tentative specifications submitted to all divisions for final recommendations.

At the time of this conference, one important series of product protection standards had already been developed. It is set forth in the IHC *Product Protection Manual,* based on a great deal of careful research work. It is a thick volume of 150 mimeographed pages. It is assembled in sections which may be applied independently and which are being supplemented from time to time by new specifications and bulletins. There are included numerous sketches and photographs to indicate packing procedures, and also sample forms for follow-up checks of the reliability of packages used in foreign shipping.

Sections in the manual cover cleaning, corrosion prevention, strip-coating compounds, packaging protection, interior cartoning, identification, exterior containers, case liners, outside markings, unboxed parts, and bundling.

It was stated by company officials that "although product protection may sometimes be considered an added expense, the ultimate end is almost sure to be a savings in cost. For instance, to ship a finely finished piece part from our service department in bulk to our branch houses without adequate protection, might result in such serious damage to the part that it would have to be scrapped."

One specific example of reduction in packaging costs, reported by a Harvester plant, was as follows: "In June 1944 we developed an entirely new pack for our K-5

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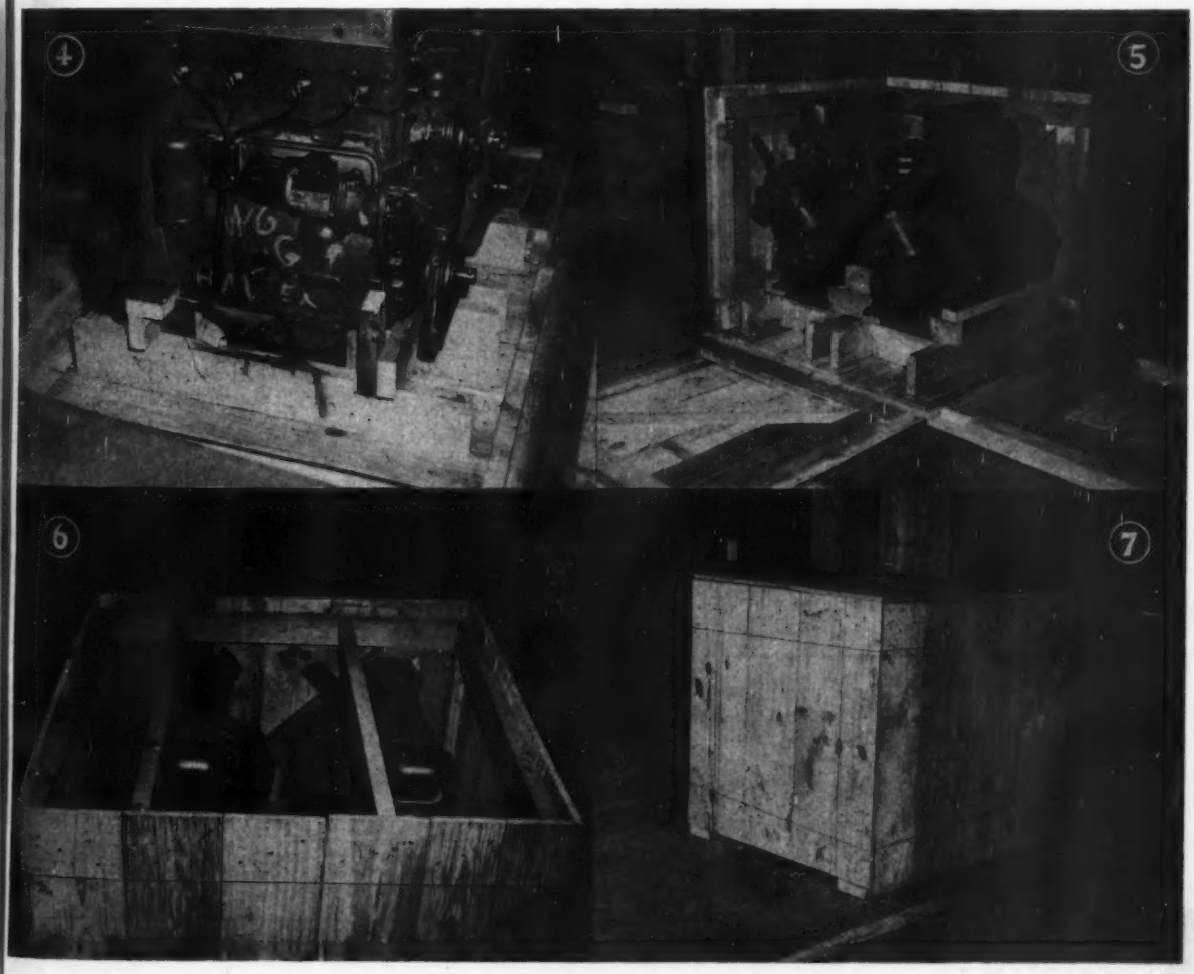


More Profits Through Controlled Distribution

Part 6—Distribution Methods

No business could function without some sort of standard practice. Did the methods in your business "just grow" like Topsy, or are they the result of long and painstaking research?

By R. M. COBURN
Marketing Consultant

STANDARDS imply standard methods.

"One of the essential features (of scientific management) is the determination and application of standards, not only of performance, but of methods and equipment. In fact it is a cardinal principle of scientific management that a proper standard of performance cannot be attained in the absence of standardized methods and equipment; and it was in the effort to secure standard performance that Mr. Taylor and his associates were led to investigations of detailed processes which have themselves become classics."[1]

[1] Reprinted by permission of the publishers from Clarence B. Thompson, editor —Scientific Management (Harvard Business Studies No. 1) Cambridge, Mass. Harvard University Press, 1914. p. 10.

The dictionary designates "method" as, "The use of a defined or regular plan; also a special or established form of systematic procedure; . . ."

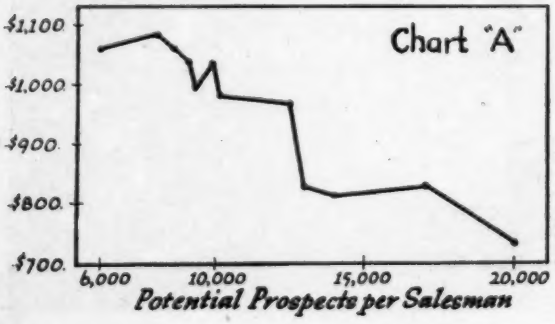
The term "standard practice," to denote systematic procedures, is coming into general usage and, because it is self-descriptive, it will be used in these articles.

No part of a business could function without some sort of standard practice. Those that are managed by rule-of-thumb allow their methods to grow like Topsy or, if they take the pains to apply some degree of standardization, they will establish procedures empirically—without engineering and objective research. Companies, however, which operate under the principles of scientific management will establish standard practices only after long and painstaking research in order to determine, objectively, what are the best possible procedures for every single function. As a matter of fact, under truly scientific management, the best method is only the "best" until a better one is found and the better method remains standard practice until continuous research, analysis, synthesis and tests replace it with an improved method which, in turn, becomes standard practice.

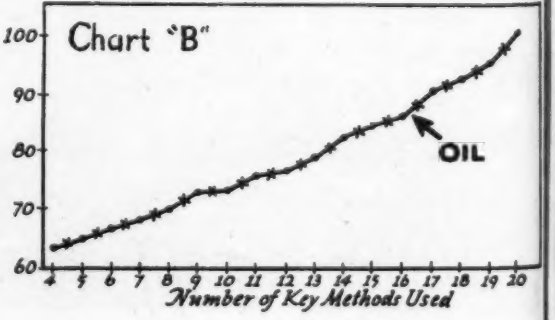
In most concerns, marketing—especially in the sales department—offers a golden opportunity to reap a rich harvest by the scientific establishment and utilization of standard practices. The creation of standard practice is almost entirely a staff function and, because many sales managers bitterly resent the intrusion of "theorizers" into their sacred domains, the sales field, except for a few enlightened managements, represents a virgin field for this kind of staff work.

In the preceding article it was demonstrated that there are at least 9,000 different standards that can be made available to the sales department, any one of which would have practical utility in some circumstance and which would require its own individualized standard practice for achievement.

Average Monthly Sales Per Man



Average % of Quota Attained



Trade-Ways, Inc., previously mentioned, has done some remarkable work in establishing standard practice in sales departments, using the utmost objectivity in analysis and synthesis. Here are some examples:

1. The Use of Selling Time by 34 Industrial Salesmen.

Time	Use of Time	Sales Volume
29%—	Calls on Customers	80%
25%—	1st & 2d Calls on Prospects	17%
37%—	Follow-up Calls on Prospects	2%
7%—	Calls on Lost Customers	1%

Someone has decided that salesmen should spend more than a third of their time following up prospects. How the decision was arrived at, none knew. It was just the result of collective, un-analytical, subjective opinion. No one took the trouble to do a little measuring to find out that 44 percent of the salesmen's time was spent to bring in 3 percent of the business. In this instance it was possible to salvage the entire 44 percent and use it on the first two categories. Sales went up accordingly, because a "theorizer" asked a few simple obvious questions.

2. The Relative Value of Cold Canvassing.

This was an analysis of 3 factory branch stores selling directly to consumers. The territories were close together and were virtually identical. The sales forces averaged the same caliber.

DIVISION OF CALLS			
Territory	Cold Calls	Lead Calls	% Closed
A	80%	20%	10%
B	66%	34%	14%
C	59%	41%	18%

The salesmen in "C" territory were earning on the average 80% more income than those in "A" because the branch manager discovered that cold canvassing is the least profitable standard practice, contrary to accepted opinion.

3. How Salesmen Divided Their Time on Prospect Income Groups.

Group	Rent Paid	% of Time Spent	Relative Salability
A	Below $30	53%	100
B	$30 to $49	12%	216
C	$50 to $74	16%	284
D	$75 and up	19%	168

The salesmanager "thought" the main appeal of the product—a household utility—was economy and "figured" that the men should spend most of their time with low income prospects. An objective study of the relative salability of the 4 groups showed conclusively that subjective opinions are often costly. Had the men concentrated on B and C groups (there were plenty of prospects) sales would have been 2.5 times greater.

There is tremendous significance in this simple example of ordinary common sense. Without elaborate statistical analyses, without drawnout and costly research, without adding one cent to fixed sales costs (men were on straight commission) and without any changes in organization or mechanical routine, but merely by learning a few ordinary facts about its market, this company was able to increase its sales two and one-half times. Why was it necessary for an outside consultant to come in to tell them that they were making their salesmen waste nearly three-quarters of their time chasing rainbows? Could the lack of staff work be the answer?

4. Size of Territorial Assignments.

It has long been an accepted theory that the larger the potential in a one-man territory, the more sales volume would result. Yet when a careful, objective study was made of one company's territories, exactly the reverse was found. The salesmen with the smaller potentials were consistently getting the most volume.

If the sales manager had a good staff to do his thinking for him, he would have been told that the reasons for this apparent paradox were that men with small potentials worked

(*Continued on Page* 82)

Let's be Quizzical-

● Wherein Jack McCormack, free lance traffic manager, suggests the quiz as one approach to the problem of improving packing and shipping methods.

By HENRY G. ELWELL
Traffic Consultant

THE discussion in the office of the Carter Mfg. Co. had turned to the subject of packing and shipping procedures. Herbert H. Foy, treasurer, brought up the matter by saying: "It seems to me our packing and shipping practices could be improved."

Frank S. Wood, comptroller of the organization, nodded assent. "I think you are right," he agreed, "and furthermore, I feel that our costs for these operations are too high."

"Have you made any definite study of the methods now in use?" inquired Jack McCormack, freelance traffic manager.

Wood frowned. "The fact is," he admitted, "we have done nothing at all, mainly because we do not know where to begin."

"Jack, have you any suggestions to offer?" asked Foy.

"You know, of course," replied Jack, "that each unit of a business is part of the whole. In the case of packing and shipping an efficient shipping department is the result of simple, but effective, checks and counterchecks plus competent supervision. Many times a concern has a capable shipping clerk, but fails to furnish the department with proper facilities and systems. Quite frequently, too, an industry does not provide the assistance of a general traffic department to guide the shipping department."

"What do you mean by referring to a general traffic department as guiding a shipping department?" demanded Wood. "Aren't traffic and shipping one and the same?"

"Not at all, Frank," laughed Jack, "but I'll explain the difference to you at some other time. Right now give thought to packing and shipping plans."

"Agreed," said Foy. "First, what about packing?"

"A study of packing naturally entails consideration of containers," Jack stated. "I can give you some of the basic items which should be covered in making an analysis of the packing of the company's product. Here is a suggested list of questions embracing the fundamentals. After the answers have been collected, call in a packaging engineer. In this way we will be in a position to really determine whether or not adjustments should be made for improvement."

Jack handed Foy and Wood copies of a typed list reading as follows: What kind of container is now in use? Of what material is it made? Of what construction? What is the gross weight with contents? Number of units carried in outside container? Does much damage occur in transit? What is the nature of the container weakness? Are any bureau of explosive container specifications involved? Are new containers always used? Is the product shipped in the same containers as received for inbound materials? Is a multiple-trip (returnable) container used? If so, is

(Author's Note: Names of persons and companies are fictitious.)

any credit allowed for returned containers? What records are kept of such containers? Can returned containers be identified as company's own? How? What other types of containers have been tried, used, or abandoned? Reasons for discontinuance? What packing is used by competitors?

"Jack," observed Foy, "I realize you haven't attempted to cover in this list every possible angle, but it does give us a base from which to build."

"Why should we go to all that bother?" grumbled Wood. "We already know what kind of container we use; its gross weight and all that sort of stuff. In my opinion, we would be wasting our time."

"Hold on, Frank," protested Foy. "If we wished to obtain a loan from a bank wouldn't we have to get down to the financial details? To some extent doesn't the same principle apply? If we hope to solve our packing problem won't we have to commence at bedrock? As I see it the essential step is to start digging for data."

After considerable arguing Wood finally admitted the necessity of including elementary evidence in an investigation of packing.

"That's that," grinned Foy in relief. "Next, what about probing our shipping methods?"

"Well," Jack asserted, "such an inquiry should also incorporate receiving and warehousing. The three functions are much more closely related than appears on the surface."

"In what way?" challenged Wood.

"Mainly because transportation is involved, thus creating similar issues. Receiving has to do with inbound raw materials; warehousing embodies the stocking of both raw materials and finished products; shipping is that part of a business engaged in forwarding finished products to customers. Yet, basically, movement applies to all three of these services despite the fact that commodities are temporarily at rest when in a warehouse."

"That's a new thought so far as I am concerned," mused Foy, "but I see your point, Jack. Would you go so far as to say one man should be in charge of receiving, warehousing, and shipping?

"Yes," declared Jack, "insofar as supervision at the plant of production. It's different, though, in regard to the storing of finished products in public warehouses located at points distant from the place of manufacture."

"You are wrong," snapped Wood, "under that scheme there would be no control over the physical stock because only one department head would be liable for receiving, plant warehousing, and shipping. That would open up a wonderful opportunity to defraud the company."

"But," explained Jack, "under a proper set-up the control records would be maintained by other departments. By the order department, for instance, in the case of finished products."

"Jack's idea is worth noticing, Frank," interjected Foy, "and we

(*Continued on Page* 85)

Export Packing is a Science

Damage claims on export shipments run into millions of dollars annually . . . The selection of proper packing materials, on the basis of scientific findings available to all shippers, will greatly reduce these losses and make for more economical and efficient distribution.

By ALFRED L. LOMAX

Professor of Business Administration
University of Oregon

THE transportation of merchandise overseas has always been a more or less hazardous undertaking—for the package. Damage claims paid by steamship companies, railroads, truck lines and insurance companies run into the millions of dollars each year. Much of this is due to the unscientific selection of packing materials. It is a foregone conclusion that exporters want their shipments to reach their customers in the same first class condition as when they left the factory. But when all the hazards of land transportation to seaboard are considered, as well as those at the port, on the ship, and again at port of import, it is a wonder that cargoes arrive in as good shape as they do. Some of these physical risks of movement are transfers from freight car to shed or vice versa, or to and from trucks; from car or truck to pier, thence to ship. Conditions within the carrier must also be considered such as heat, cold, or proximity to other cargo which might sweat, leak, give off odors, or otherwise contaminate; also chafe, press, dent or break loose due to faulty stowage and shoring up. And pilferage, which frequently occurs on the carrier cannot be overlooked as a constant threat to the safe arrival of goods.

A great deal of study and experimentation has been in progress on containers and materials since approximately the first World War. The Forest Products Laboratory at Madison, Wis. has been among the foremost institutions vigorously prosecuting studies along this line; especially have its contributions on the structural strengths of woods applicable to boxes and crates been highly regarded by all users of transportation as well as by the transportation industry itself. The American Iron and Steel Institute has likewise made extensive studies in the same field for steel products. As a result, no less than 32 species of wood are listed for use as outside containers. Somewhat comparable are the experiments of the pulp and paper industry, bag manufacturers, materials handling companies, and insurance underwriters. This places the subject of exterior packing on a scientific basis, so that the construction of boxes, crates and other containers has ceased to be a matter of guesswork and lies very much in the field of engineering.

It should also be mentioned that the Assn. of American Railroads, the individual steamship companies and the airlines, are constantly instructing their patrons in the use of proper containers, and the Interstate Commerce Comm. has incorporated in the Consolidated Freight Classification definitely worded rules for both packing and packaging. Airlines have worked assiduously toward the construction of light but strong boxes not only as a merchandising aid to their customers, but to keep freight charges on a competitive basis with other transport media. Marine insurance underwriters have spent large sums of money in an effort to eliminate the growing volume of loss payments because of poor

packing, which involuntarily abets pilferage.

The use of proper containers is part of the new science of *industrial logistics* which is the study of the economical movement of goods from producer to consumer. Special attention is given to the shape of boxes, barrels, bags and bales, and their handling at docks, warehouses, factories, and stowage on ships and other carriers. Obviously, ignorance is no excuse for poor packing, which brings ruined merchandise to the importer and goodwill turned sour to the exporter.

In spite of competitive materials, the wooden box ranks highly in foreign trade. The standards set for steel products, namely, density, flexural and compressive strength, stiffness, shock obsorption, and nail holding power, can also be listed for other products. Most of the common woods such as buckeye, magnolia, yellow, poplar, ash, the gum trees, hickory and oak, the commercial pines, larch, and the well-known Douglas fir, qualify. The wood should be well-seasoned, relatively free of knots or other weakening features which would permit moisture, foreign substances or other damaging elements to enter. The exterior surface should be smooth to permit legible marking. This may seem like an unimportant factor in the safe delivery of cargoes, but it is authoritatively stated that a very great deal of loss is due to improper marking. A smooth surface permits the efficient use of the stencil without blurring.

The obvious advantages of the wooden box lie in its natural strength, ease of acquisition of various kinds and grades of box lumber, resistance to weather, and its by-product use in foreign countries as scrap lumber. These good features are somewhat offset by the natural tendency to split, warp, shrink and check which results in loose fastenings, leaks, and overall weakening. Some of these deficiencies can be overcome by using only well-seasoned lumber. The aforementioned less desirable qualities are disclosed under most trying conditions encountered in ships' holds, railroad yards, piers, docks, and even on foreign beaches, river banks and exposed mountain tops.

To circumvent the ravages of both man and nature, linings are used to add strength, to waterproof, and to minimize pilfering. Dampness of sea air, sweating in the holds, or worse, a drenching while being lightered at some roadstead port, make liners an essential for wooden boxes. Tarred or oil papers, oilcloth and canvas are among the kinds used. Occasionally, tin-and zinc-lined boxes are found. To give further strength and protection steel strapping or wire is almost always used, and this too has become a special study and business.

The size of the box is also important. It should be just large enough to carry the goods for which it is designed, without waste space. Thus carefully engineered,

(*Continued on Page* 79)

Preferred Numbers

(*Continued from Page* 31)

sion indicated by the numbers 1 to 12 placed along the horizontal axis, by their logarithms as ordinates, see single circles. The 20- and 40-series are indicated by double circles, for comparison with the 12 listed lengths.[2] The points representing the listed lengths 14, 15, 16 and 17 lie on a straight line with the same steepness as the 40-series and are the only portion of the 12-point line that is systematic. In the lower range (10 to 14) and the upper range (17¼ to 20) the line follows neither the slope of the 20-series, nor that of the 40-series. Striking is the fact that there are large percentage increases at the small end of the series, such as from 10 to 12 inches (20 percent), as against quite small increases near the large end, such as from 17¾ to 18 inches (1.4 percent). Therefore, if the manufacturer lays value on a constant proportional increase, the series of 12 listed lengths is rather unsatisfactory to him, especially below 14 in. Here, the 20-series would give him the value 10, 11.2 (or about 11¼) and 12½. Possibly he may be able to use the listed length 12, but there would be no good reason for him to take 13¾, a length only ¼ inch less than 14. Therefore, he may decide to order cartons with lengths 11¼ and 12½ in. as "specials", thus adding some more to the variety that has already grown up. If the gradation of the series in the range from 10 to 20 must be finer than that of the 20-series, the manufacturer is still worse off, in the range from 10 to 14. While he should have here 7 lengths increasing in the constant ratio of 6 percent, he finds only four lengths, increasing by unequal percentages, the largest being 20 percent.

So far for the lengths alone. The entire problem becomes still more complicated when the manufacturer takes into account also the widths and heights of the cartons available. Altogether, he is lucky if he finds among the 34 cartons offered him at least some he can use, even though there is no systematic relationship between them.

If Preferred Numbers had been applied to the establishment of the dimensions of the cartons, the picture would be quite different. For example, it might be found that a particular branch of industry could get along with carton dimensions of the 20-series, in so far as the range from 4 to 20 in. is concerned. For a series of cartons of a given shape (that is, for a set of fixed length-width and length-height ratios), a set of dimensions could then be laid down at once, simply by selecting them from the 20-series, see Table 2.

TABLE 2

Series of cartons of the same shape based on dimensions chosen from the 20-series of Preferred Numbers

Length	Width	Height
10	6¼	4
11¼	7	4½
12½	8	5
14	9	5½
16	10	6¼
18	11¼	7
20	12½	8

Obviously, since Table 2 applies merely to a series of cartons of one shape a similar series of dimensions based, for example, on the shape 10 x 8 x 5½ in., might be wanted by another branch of industry. However, it is clear that taking the situation as a whole, the use of Preferred Numbers would reduce the total variety of dimensions (lengths, widths and heights). Moreover, as shown by Table 2, their use would create a recurrent pattern of values which again would lead to a reduction of the variety of dimensions required by boxes or crates intended to contain a number of cartons. In other words, the application of Preferred Numbers to one element (cartons, in this case) will build up into simplification and harmonization of an entire system of related elements. Therefore, it would seem that Preferred Numbers deserve special attention on the part of those interested in packaging. This problem involves many dimensional specifications, as well as specifications for packaging materials. This variety is reflected in the requirements to be met by packaging machinery and all kinds of materials handling equipment, such as conveyors and lift trucks.

Suppose that lift trucks were just coming into use and that those watching the market for the new device reported that there was a demand for trucks with capacities from 1000 to 10,000 lb. If then the several lift truck manufacturers used Preferred Numbers as a guide, they might begin by adopting six standard capacities according to the 5-series: 1000, 1600, 2500, 4000, 6300 and 10,000 lb. If later on, a smaller step-up appeared desirable, the original series could be expanded to the 10-series by addition of the ratings, 1250, 2000, 3150, 5000 and 8000 lb. But this does not mean that all of the ratings of the 5-series would have to be put into production at once. Possibly, the manufacturers would start with the three smallest units (1000, 1600 and 2500 lb.), adding others as the need arose. However, independent of the order in which trucks of the various capacities would be marketed, all of the manufacturers would independently and automatically produce the same capacity ratings, without this affecting in any way their individual designs.

This example also shows clearly the equal division of the adaptability of Preferred Number ratings to the requirements of the user throughout the entire range covered. If the ratings follow the 5-series and a user wants a lift truck with a capacity of 1200 lb. or 20 percent larger than the smallest truck listed (1000 lb.), he must take the 1600 lb. truck, which is 1/3 larger than he needs. The same condition exists in all of the subranges. For example, at the large end of the series, a truck user who wants a 7500 lb. truck

[2] Since Preferred Numbers increase in geometric progression, their logarithms increase in arithmetic progression. Therefore, in a prefernograph, the Preferred Numbers of a given series lie on a straight line.

(which is 20 percent larger than the 6300 lb. listed truck), must take a 10,000 unit or again, one which is 1/3 larger than required. Therefore, with the 5-series, all users are in the same position as to flexibility of choice, whether they are interested in a small, a medium or a large truck. This advantage is due to the constant step-up of 60 percent between two consecutive ratings, throughout the 5-series.

Actual conditions are different, however. There is no general standard for lift truck capacities, but it has been reported that at least two manufacturers of this equipment have adopted the same ratings, as follows: 1000, 2000, 2500, 3500, 5000 and 6000 lb. While the values 1000 and 2500 are Preferred Numbers, the series as a whole does not even have geometric progression. On the contrary, the step-up varies from 100 percent at the small end, to 20 percent at the large end of the series. Here, a user who wants a 1200 lb. truck, or one that is 20 percent larger than the smallest unit (1000 lb.), must take a truck with a capacity of 2000 lb. or 2/3 larger than required. On the other hand, a user who needs a truck 20 percent larger than 5000 lb. just hits upon the catalog rating, 6000 lb. for which he is looking.

Furthermore, if truck users insist on the addition of another capacity, say between 1000 and 2000 lb. the step-up of 100 percent being judged too great, one truck manufacturer may add a 1200 lb. unit and another, a 1500 lb. unit. Here again is proof that diversity may increase simply because the use of Preferred Numbers is disregarded. If the 5-series had been adopted, the capacity, 1250 lb. would automatically be inserted between 1000 and 1600 lb. when required, by all manufacturers.

Examples of this kind can be multiplied indefinitely. They show that Preferred Numbers can be used for two main purposes which may be briefly restated here: to select a standard series of values having a systematic and significant step-up from a large variety of non-coordinated existing values; or to lay the foundation for a structure of standards to be developed in a new industry. In both respects, Preferred Numbers can render great services to those dealing with packaging problems.

Fellowship Awards

The National Board of Trustees of the American Designers' Institute at a meeting on April 24, announced that Fellow Memberships for distinguished service to the industrial designing profession and to the Institute have been conferred on the following: **Alfons Bach,** New York; **Ann Franke,** New York; **Ruth Gerth,** San Francisco; **Marie Kirkpatrick,** Grand Rapids; **Belle Kogan,** New York; **Alexander Kostellow,** New York; **Ben Nash,** New York; **Gordon Obrig,** New York; **Ernest Swarts,** Rockford, Ill.; **John Vassos,** New York; **Scott Wilson,** New York; **Edward J. Wormley,** New York.

Honorary membership in the American Designers' Institute were conferred on **Jan Juta,** mural painter and Chief of the Division of Films and Visual Information of the United Nations, and **M. Le Corbusier,** internationally known architect, designer and town planner.

Freight Forwarders and the CAB

(*Continued from Page* 50)

be great possibilities for time saving through the use of forwarders.

Freight fowarders however can be very important in air transportation because the greater part of shipments moving in that manner probably will be small in size for some time to come. In other words, many shipments will continue to be below the 25 lb. minimum. This statement is borne out by air express figures as shown in Table 2. Many air express shipments will be sent by air freight as time goes on. It won't take shippers much longer to discover that there is very little difference in speed of transit between the two services. About the only difference between air express and air freight today is in the pick-up and delivery service, since the shipments go on the same planes as a rule and air freight rates are much lower than air express. However, with the 25 lb. minimum still in effect, it will be more advantageous for a shipper to use a forwarder than to make the smaller shipments independently. (Of course, should the airlines remove the 25 lb. minimum entirely or lower it, the freight forwarder would not find himself with the present economic justification for his existence.)

TABLE 2

Average Weight of Air Express Shipments 1932-1946 * (pounds)

1932	5.870
1933	5.929
1934	6.320
1935	7.695
1936	8.017
1937	6.873
1938	6.607
1939	6.719
1940	7.141
1941	8.602
1942	15.451
1943	19.897
1944	19.324
1945	18.693
1946	14.335

* Compiled from exhibit REA-1-21, CAB Docket No. 681 et al

To a considerable degree the need for air freight forwarders depends on CAB action concerning independent air cargo operators. If several of these are certificated, or if the Board continues to permit them to operate without certificates for a considerable period of time, the forwarders will play an increasing part as ground service and soliciting agencies for these carriers. Of the 13 actively-operating non-certificated air cargo operators appearing in the Air Freight Case, 10 admitted that they were dependent on freight forwarders for obtaining their traffic to some extent and all believed that forwarders would be the means of developing an estimated potential of from one to five billion ton-miles of cargo in the next few years. Some of the smaller non-certificated operators now receive up to 90 percent of their traffic from forwarders, and even the larger operators receive nearly 50 percent from forwarders.

On the other hand, if the CAB does not certificate independent air freight carriers and does not permit the continuance of their activities on a non-certificated basis, the field for freight forwarding of air freight decidedly will be limited. With the growth of Air Cargo, Inc., and its ground services, the airlines will be in the forwarding or consolidating business themselves. If Congress should amend the present Civil Aeronautics Act to bring contract carriers under the CAB, which is entirely possible, the field for freight forwarding by air would be limited still more.

CAB Air Cargo Ruling

On May 8th the Civil Aeronautics Board took a very significant step in its regulation of air cargo carriers. On that date it modified its Economic Regulations so as to set up a new classification of air carriers to be known as "Non-Certificated Cargo Carriers." Under this regulation operators of air cargo lines, as distinct from the certificated airlines, are allowed to engage in the common carriage of property without a certificate of convenience and necessity. Such air carriers must, however, have been in operation prior to May 5, 1947, and already have an application for a certificate of convenience and necessity pending before the CAB. They may fly on a regular or irregular basis in both interstate commerce and in commerce between the United States and its territories, but not internationally. They may not carry passengers and, moreover, they may operate only until such time as the CAB has had an opportunity to pass on pending applications. The cargo carriers falling within this new group must register with the CAB which will issue "Letters of Registration" subject to suspension and revocation by the Board on due notice and for good cause.

By this action the CAB has given recognition to the fact that if the full air cargo potential is to be developed it is necessary for the independent air cargo carriers to operate in part on a scheduled, common-carrier basis. In the air cargo carrier's operation the points to be served may still change from time to time but his flights, probably originating in early evening hours, may now be operated on a fairly regular basis as the demands of shippers may require. Also the air cargo carrier is given a certain amount of stability in his operations by the issuance of the "Letters of Registration" which may not be revoked without due notice. In some circles this action of the CAB is thought to portend the issuance of certificates of convenience and necessity to a number of independent air cargo carriers, but this remains to be seen.—J.H.F.

Package Design . . .

(*Continued from Page* 24)

of the consumer rather than starting in the factory of the producer, since good packaging has as its ultimate purpose the promotion of sales and increasing the number of users of the product which is being packaged.

In applying this check list to any specific problem there will undoubtedly be many questions which do not apply, but the list should be looked over in connection with each packaging program in order that no points are missed.

Several check lists on the subject of packaging have been compiled but the majority of these have applied to the second and third stages of package design.

Improved Handling

(*Continued from Page* 40)

partments where the flow of merchandise to be packaged is not uniform there is more work and trouble than in cases where the flow is uniform. Where the flow is uniform the use of conveyors makes it possible to route material over a definite line of travel. This facilitates proper stencilling, steel-strapping, tape-sealing, or otherwise preparing for shipment. In such departments, it is possible to effect mechanical transfers and to utilize special stacking machines. Machines of this type were described in the May issue of DISTRIBUTION AGE. This issue also described how uniform packages can be transferred from a continuous conveyor line and built into various pallet patterns for mechanical palletizing.

In some of the large canneries, devices have been developed which pick cans off of the labelling machines and directly into cartons. The cartons then run through a series of conveyors for sealing, numbering, stencilling, etc. In large bottling plants, bottles are automatically picked off the end of a line and placed in cases while in transit over the continuous conveyor system.

Modern packaging requires the use of wire and steel strapping. Where this strapping is done in any volume the devices used for this purpose should be incorporated in the conveyor system so as to eliminate transfer handlings. Where the strapping, stencilling, and similar operations can be done during the uniform flow of materials, considerable time and effort can be saved. One of the most important items to be considered in a shipping room is space. A congested shipping room leads to improper packaging, loss of valuable shipping documents, damage to merchandise and loss of time in getting out shipments. This in turn leads to higher packaging costs for the labor involved in the actual packaging operation, and to serious delays in clearing the shipping floor at the end of the production day.

Recently, the writer was in a small manufacturing plant where the necessity of meeting production schedules caused frequent bottlenecks in the shipping department. This seriously handicapped, a painting operation which was required before shipment. An investigation disclosed that this condition could be remedied by the installation of two simple 8-in. I-beam tracks, each with a ½-ton electric hoist on a monorail trolley. This improvement made it possible to easily stack heavy units, three high, as they came from the end of the production line and one man was able to rehandle them, paint them, stack them in pairs and bolt them together for shipment. In this way, these production surges were

(*Continued on Page* 128)

Transportation Problems

Ships and Sea Power—Part 3

By HENRY D. CLEVELAND

Chairman of the Board
John S. Emery & Co., Inc.

THROUGH the fog of mental confusion released on the world by the atom bomb, this historical fact remains clear—The sea power of the British navy, built up to maintain a profitable merchant marine, kept the world at peace from 1817 to 1914.

No one can deny that we have inherited this obligation, and willy-nilly, must do our best to fulfill it. Our first problem is to get a profitable merchant marine that will not be a burden upon our taxpayers.

The mechanics that have made possible the success of our productive system are well known. I shall try in this and the following two articles, by means of plans and statistical data, to explain how it is mechanically possible to speed up our distribution system to match production.

Taking all factors of water transportation into consideration, it has been found that the best boat for Great Lakes traffic has a capacity of 12,000 deadweight tons on an 18½ ft. draft. Based on the above premises, a vitally needed all-purpose American type ship with a 17½ knot sustained speed has been designed, adapted for the support of our army and navy anywhere in the world. This brings up to date plans approved by the old shipping board in 1920 for a 10,000 ton Pacific coast lumber carrier having a Columbia River bar draft of 21 ft. This ship, while a proven lumber and bulk carrier also can carry a 24 ft. container identical in size with the 24 ft. trailer body in general use on the highways of the United States. This new American clipper ship, loaded full from anywhere in the United States outbound, can stand very low inbound rates. This, in turn will allow great increase in import volume of raw materials.

These ships are easily convertible to many navy uses, and in case of disarmament they will provide us with a potential modern navy at little expense. Trained personnel could be developed from among the officers of these merchant vessels, who should be given United States Naval Reserve ratings. With profitable operation, American wage scales can be maintained, and we then will have the support of the maritime unions.

In 1904 at the Seattle Lumber Co. docks, I was engaged in tallying lumber on board a vessel a piece at a time. This vessel with an operating overhead of $500 a day, was in port 30 days. After 15 days, $100 a day demurrage was chargeable to the sawmill, which failed a few years later. At about this time an operation had been started to ship lumber from Port Orford, Ore., to San Francisco. Here, the sawmill stacked its lumber alongside the pier where the vessel was to load, and hoisted aboard a sling load of lumber weighing five tons. The owners of this sawmill and the yard in San Francisco were thus enabled to make two trips a months as against one trip a month by means of the ordinary practice. In so doing, they made a fortune for their stockholders. The writer, after spending nine years in the lumber business on the Pacific coast, came to Boston the year before the opening of the Panama Canal. There, he sold and arranged for the shipment, through John S. Emery & Co., of the first two ship loads of lumber to pass through the Panama Canal. These shipments were handled in the old-fashioned manner, without any packaging of the lumber. The operation of the steamer showed only a slight return on the investment. The writer began a study of the adaptability of this lumber operation to coast to coast trade. He developed at that time the ideal kind of vessel for lumber and bulk cargo with the aid of the Fore River Shipbuilding Co., Quincy, Mass., a division of the Bethlehem Steel Corp., which built the first Emery steel vessels. Since those days we have seen the rise of the motor carrier industry with its 24 ft. trailers, the exact size of the package that we expected to use in the coast to coast lumber trade. With this fact in mind, the new American clipper is presented herewith. This vessel's gear can pick up and deliver a 35 ton load to either side of the vessel, and a long distance away from its side, enabling the ship not only to service barges on one side while lying at a pier, but also to handle containers of the type to be discussed in next month's issue from railroad cars or from trucks.

As a ship earns money only when it moves, it goes without saying that these economies not only in labor, but in overhead as well, are self-evident.

In round figures, in 1904 under the British flag a 10,000 ton vessel was operated for about $500 a day or less. Today, this figure is at least $1,500 under the American flag. As a consequence, the enormous saving to be made when the

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Henry Wallace wants us to lend the Russians $15 billion to insure peace Why not spend that at home so that our distribution can catch up with our production? Then perhaps we can accomplish the same result by giving our surplus foodstuffs away, and in so doing, keep our economy on an even keel.—H.D.C.

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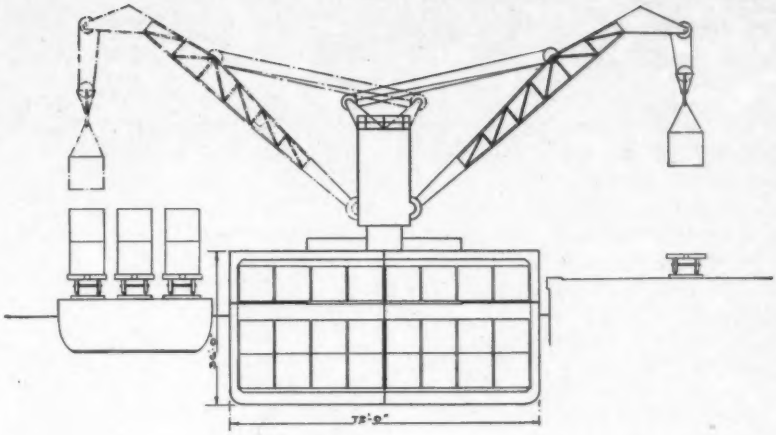
vessel's time in port can be reduced from days to hours is clear.

After foodstuffs and cotton, the foreign trade of the United States now consists very largely of the products of the automobile industry. These are subject to huge expense for export crating. The 24 ft. containers shown in the ship's holds can be shipped from any production line in the automobile industry. Inside of it, there is room for an automobile plus a knock-down tractor unit with parts and tires. When this container arrives anywhere in the world, the tractor can be assembled, and the container becomes a trailer which can be sold as a complete motor carrier unit. Otherwise, the container can be filled with goods of the foreign country to be returned to the United States for re-use. The enormous crating expense for this type of shipment too thus can be eliminated.

The new American clipper is very efficient, but is by no means

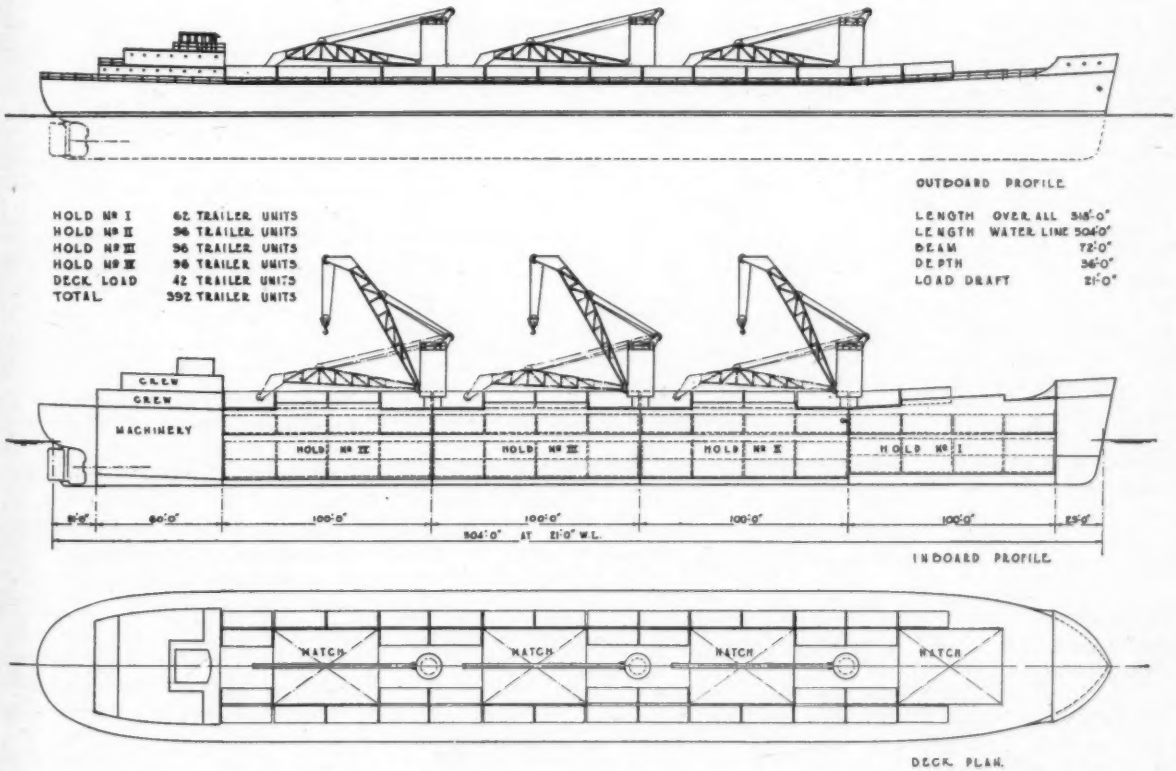
(*Continued on Page* 83)



The New American Clipper. Speed 17½ knots. Weight of cargo per unit 20 tons. All units in general conformance to standard 24 ft. trailer body.

These drawings are subject to many modifications when the ships are to be used in specific line services. The general practicability of the design, however, has been checked and brought up to date by various individuals in the Gibbs & Cox organization, architects to the United States Navy.

When operating as river boats, where a minimum of fuel and stores are necessary and using aluminum trailers, the designed draft of this vessel can be greatly reduced with the same deadweight cargo capacity. In this trade, too, much larger deck loads of trailers are possible for by reducing the unit weight to 15 tons on a stowage factor of 100 cu. ft. per ton the ship more nearly fits operating conditions.



The Flexible Tariff Act of 1930

(*Continued from Page* 42)

may be free to secure any needed goods in any part of the world with only reasonable restrictions; and (4) proper protection of the labor standards for American working people.

It has been suggested that a nation which imposes a quota or embargo against our trade should by that act be deemed to have automatically removed itself from our list of completely cooperative friends, and should suffer a corresponding loss of opportunity in trade with us. Our rights of free access to goods probably may be limited to the extent that a supplier nation wishes to process within its own borders, for sale in a more advanced manufactured condition, the goods which we would like to buy. But it is the thought that we should not permit discriminatory sales, detrimental to our business, which favor another nation.

Particular attention has been directed to cartel controls which are within the reach of foreign governments but not subject to American influence and discipline, and from which restrictions American industry should be freed. It also has been suggested that any agreements should provide for cancellation on short notice if international exchange arrangements result in a new or unfair financial relationship between this country and suppliers or competitors in other countries. It is stressed that American industry should be given a maximum opportunity to deal with industry and with the citizens of other nations, and not compelled to trade with governments or government trade agencies, such as the British Board of Trade. It is pointed out that Congress has two principal purposes in imposing tariffs. The first is to raise revenue by taxing imports in a manner thought socially expedient and in the general public interest. The second is to protect the American standard of living by imposing charges that will prevent low-wage labor abroad from unfairly competing with American workers in a corresponding industry.

Senator Malone and other members of Congress do not seek to make a new law to establish the flexible tariff. The main object appears to be to arouse the Administration to an awareness of the fact that there are laws which enable the President to make the application of the existing tariffs flexible. The basis of these laws has been on the Statute Books for a quarter century. The Fordney-Macomber Act of 1922, was enacted to stiffen the anti-dumping laws of 1916—World War I—and to give more protection against foreign imports than was provided by the Underwood Act of 1913, the tariff act which virtually placed the United States on a free trade basis. The Fordney-Macomber Act of 1922 empowered the President to move the existing tariffs up or down, as he saw fit, after consulting with the U. S. Tariff Commission. This is the basis of the Flexible Tariff Idea, which Senator Malone wishes the Administration to expand and harden and put into operation. The Fordney-Macomber Act fundamentally was generous to the foreign producer—at the expense of the bulk of American products, according to tariff experts. They will tell you the United States still is the second or third lowest tariff nation of the world. It is explained that a half dozen or so American mass production industries—mainly manufactures chiefly involving metal constituents—have managed to hold American tariffs down in order to maintain low tariffs in foreign countries for the products which they export abroad. It is claimed the State Department, prior to Gen. Marshall's advent, loaned itself to this practice, and promulgated among women's clubs and luncheon gatherings the theory that we are a high tariff nation, in order to maintain in the low tariff an implement which it can use in political deals in international diplomacy. It is of official record that the State Department, which administers the Reciprocal Trade Agreements Act, has never raised a tariff, but has lowered some as much as 50 percent.

The Fordney-Macomber Act, like the Underwood Act, was found to be of little protection. There was a time, after World War I, when trade conditions at home and abroad were so unstable that public opinion supported the assumption that what ailed the industry and commerce of the world could be cured by a free and uninhibited flow of products and services between the nations

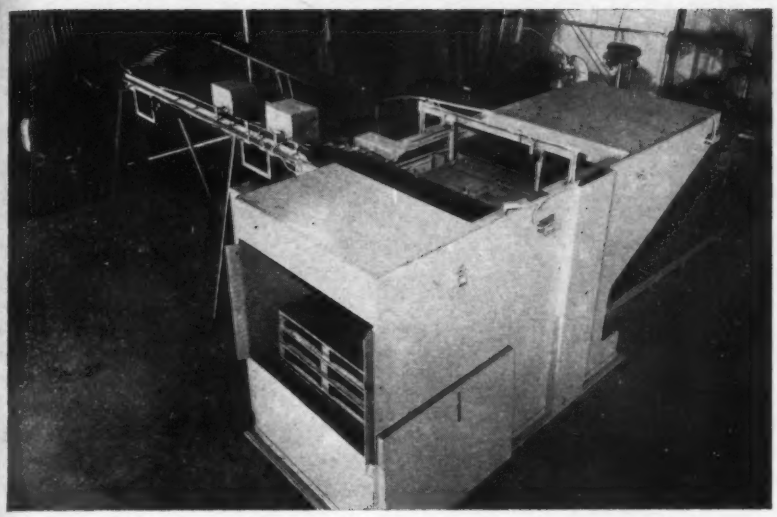
(*Continued on Page* 84)

Perfect Shipping Night

The Traffic Club of Newark, in cooperation with the New Jersey Industrial Traffic League, the Traffic Club of Jersey City, the Traffic Club of Trenton, the Raritan Traffic Club, Metropolitan Traffic Assn. of New York, and the Atlantic States Shippers' Advisory Board, held a Perfect Shipping Night last month.. Examples of good and bad packaging and methods for overcoming the latter were displayed at a Perfect Shipping Clinic. The sound motion picture, "Manila Waterfront—1946" which describes the necessity for improved overseas packaging, was shown.

The speakers for the evening were: E. E. Conroy, vice-president, Committee on Suppression of Vice and Pilferage, Port of New York, and formerly of F. B. I., who spoke on perfect shipping in connection with water transportation and the piers; Paul H. Startzman, vice-president, Drake, Startzman, Sheahan, Barclay, Inc., New York, materials handling consultants, who spoke on perfect shipping in connection with materials handling; L. M. Smith, loss and damage supervisor, Railway Express Agency, Phila., who spoke on perfect shipping in connection with railway express; John F. McDermott, superintendent of mails, introduced Chas. Krueger, Parcel Post Section, U. S. Post Office, Newark, N. J., who spoke on perfect shipping in connection with U. S. Mails; Hobart Young, freight claim agent, Pennsylvania Railroad, Phila., who spoke on perfect shipping in connection with rail freight; Alexander Markowitz, vice president in charge of traffic, Freedman Service, New Brunswick, N. J., who spoke on perfect shipping in connection with motor transportation.

The committee was composed of Chairman C. A. Nate, Federal Telephone and Radio Corp., Clifton, N. J.; Joseph Meade, Gibraltar Corrugated Paper Co., North Bergen, N. J.; A. Markowitz, Freedman Service, New Brunswick, N. J. and George E. Martin, Lehigh Warehouse & Transpn. Co., Newark, N. J.



The process of materials handling from the assembly line to the carrier or warehouse has always been delayed by the fact that manpower alone could construct palletized loads. However, the missing mechanical link, in the form of an automatic pallet loader, promises to speed future operations.

Missing Link in Mechanization

A MACHINE of entirely new design for the purpose of automatically loading packages from a conveyor line on to empty pallets is being manufactured by Production Aids, Inc., North Hollywood, Cal. The machine cross-ties the packages, building a pallet load which is ready, upon completion, to be picked up by a fork truck.

Officials of Union Oil Co. of California, which has been operating a Palletizer for the past few months on the end of a production line, are said to be enthusiastic about the economies in time and space realized through the installation.

In the opinion of executives who have seen it in operation, the Palletizer completes the missing link in a mechanized system for the mechanical handling of packaged items. To date, stacking of pallets has been done by an antiquated process of manual labor.

Packages or cartons can be assembled or stacked on the pallet by the new device in various arrangements, according to the size and the number of packages to be loaded on a given pallet.

The machine is completely automatic in operation, and automatic provision is made for safety. If the operator forgets to load the pallets into the Palletizer, or the pallets run out, the machine automatically will stop the delivery of cartons and prevent the conveyorline from delivering packages which would be dropped into the section the pallet board should be occupying.

The packages coming into the conveyor line can travel at any speed, as the machine is independent of the package conveyor line. However, if the cartons arriving over a conveyor system from the package sealer are in excess of the predetermined operating speed of the Palletizer, the accumulator roller, through its switches, will hold back the excess, so that only the predetermined speed of the Palletizer will be utilized.

The control mechanism consists of a series of relays which form a counting chain, each relay being a mechanical switch. When the power

is turned on, each coil becomes a magnet closing a switch. The control switch is located in front of the rotating table, and at the start of the operation all relays in the chain are unenergized. For example, as the first box trips the control switch, relay number one is closed. This activates the first operation in the cycle of stacking cartons on the pallet. The first carton or box may or may not be rotated, depending upon the stacking arrangement. It is then moved into the machine on a live roll conveyor. As the second box trips the control switch, number one relay disengages and number two relay engages. As subsequent boxes enter the machine, the line up of boxes may or may not be rammed or the stripper plate may or may not operate, depending upon which relay has been activated by the package. Thus, if in the sequence predetermined, the first four cartons may be rotated, and the next two rows of three each not rotated, to form one layer. As this first layer of cartons is placed on the pallet board, the next row may be rotated to crosstie the packages, making a solid pallet load.

The ram mechanism which is on top of the machine and to the rear of the powered rollers, is activated each time a row of cartons has entered the machine. This activation is set up by the following carton entering the machine. This carton is delayed by a stop, until the ram has completed placing a row of cartons on the stripper plate. As each row of cartons is pushed by the ram, the previous row of cartons is pushed further to the rear, until a complete layer of packages rests upon the stripper plate.

Each time the stripper plate is loaded, it is drawn from beneath the cartons, allowing the cartons to be placed on the pallet board, which is located approximately ½ in. below the stripper plate. The pallet board then is lowered the thickness of the package, which will allow the stripper plate to return and accept another complete load of cartons or packages. This operation is repeated until the predetermined number of layers to be made up into one pallet stack has been completed. At this time, the fully loaded pallet is lowered to the bottom of the machine and is expelled by a chain drive.

As the loaded pallet is being expelled, one of the pallets stored in the rear of the machine is brought forward, and raised by an elevator arrangement to a position ½ in. below the stripper plate. During this operation the stripper plate is accepting another layer of cartons, thus allowing uninterrupted flow of packages.

In the rear of the machine, a sufficient number of pallets can be placed to enable operation on an average use basis limited by the capacity of the best sealing machines in use today of approximately one hour.

The Palletizer is so designed that by the addition of an automatic selector switch, the operator can select any one of seven stacking arrangements by the turn of a single dial. The machine can, with this additional switch, handle a majority of the standard types of cartons used in volume by the average company. Any additional stacking arrangement, beyond the seven already offered by the selector switch, can be obtained merely by removing one control section and inserting an additional control section wired for another operational pattern within the selector switch.

Towboats Sold

One of the largest purchases of river transportation equipment ever made in this country by a foreign government was announced in Pittsburgh recently by Carl B. Jansen, president, Dravo Corp.

The order calls for delivery to the Argentinean government of the twin-screw 760 HP towboat Victory, for several years the key boat in Dravo's Keystone Division fleet; two new larger twin-screw pushing towboats each rated at 1,000 hp; four new steel deck barges for hauling sand and gravel; and 10 new weatherproof covered cargo barges.

Export Packing

(*Continued from Page* 69)

there will be elimination or at least mitigation of interior chafing, denting, crushing or other damage from within. A good example is the care with which the export departments of automobile companies box their truck chassis and parts. The floor area of the packing case is calculated to hold a standard number of units which are then secured to this base. Tires, wheels and smaller parts are placed in proper position according to a prearranged plan to the required height of the case. The ends are put on, inside bracing completed and the top finally secured. Once the packing engineers have worked out a satisfactory plan, the job becomes a replica of a production line which places the right parts in the right place for sound delivery to satisfied customers.

Furthermore, size bears importantly on ocean freight rates, which may be charged on a measurement basis (40 cu. ft. to the ton) instead of weight. Consideration must also be given to customs laws and regulations as both size and weight are sometimes involved in levying import duties. Interior transportation conditions in foreign countries oftentimes regulate the size of boxes. There are still many places in the world where goods are carried on mule back, by llama and even by human porters along narrow mountain trails which fringe deep canyons. Thus, uniformity in size and weight to fit the carrying power of these burden bearers is a controlling factor in adapting packing cases to conditions in foreign markets. The most important aspect of the subject of export packing is that the container and its contents arrive at the customer's place of business in the same first-class condition in which it is presumed it left the exporter's warehouse.

The July issue of DISTRIBUTION AGE will feature Materials Handling.

Primer of Freight Rates

(*Continued from Page 55*)

nal, interchange, intra-plant, and spotting; (2) storage, including warehouse, elevator, track, dock, or ground storage; (3) demurrage; (4) lighterage or car-floatage; (5) weighing, including platform-scale, beamscale, or track-scale weighing; (6) collection and delivery, cartage or drayage services; and (7) trap-car or ferry-car services.

The United States is divided for rate-making purposes into a number of fairly well defined territories. The exact boundaries of these territories are impossible to define because each overlaps those which border upon it so that there is a lamination sometimes several layers deep at important border-line points such as St. Louis.

The major traffic territories in the United States include:

1. New England Freight Assn. Territory, which is subdivided in turn into Zones A and B.
2. Trunk Line Freight Assn. Territory.
3. Central Freight Assn. Territory, including Zone C and extended Zone C.
4. Southern Freight Assn. Territory.
5. Western Trunk Line Committee Territory, which is subdivided into Zones I, II, III, and IV.
6. Southwestern Lines Freight Bureau Territory, which is subdivided into Zones III and IV.
7. Pacific Freight Bureau Territory.
8. North Pacific Coast Freight Bureau Territory.

New England, Trunk Line, and Central Freight Assn. Territories are collectively called Eastern Territory. In addition to these territorial divisions, another freight traffic association has jurisdition with respect to traffic moving generally between points west of the Rocky Mountains and points in the rest of the United States—the Trans-Continental Freight Bureau. Another territory, Illinois Freight Assn. Territory, overlaps the portions of Central Freight Assn., Western Trunk Line, and Southern Territory embraced in the state of Illinois and portions of Wisconsin, Indiana, Kentucky, Iowa, and Missouri adjacent to the state of Illinois.

The relative level of class rates, exceptions to the classification, and commodity rates within and between the major territorial subdivisions of the United States is a matter of ardent dispute. Some of the political spokesmen of the south and west allege that the economic development of these sections of the country has been impeded by relatively high freight rates within these territories and from points of production of goods in these territories and markets in other territories.

Without discussing the merits of these contentions or of the relative adjustments of class rates, exceptions to the classification or commodity rates, it is sufficient here to note that the Commission found that the present intraterritorial and interterritorial class rates in Official, Illinois, Southern, Southwestern, and Western Trunk Line Territories were unjust and unreasonable and would be for the future unjust and unreasonable in violation of the Interstate Commerce Act, inasmuch as they gave shippers in Official and Illinois Territories unreasonable preference and advantage and subjected shippers in Southern and Western Territories to undue prejudice and disadvantages for the present and future.

A maximum reasonable scale of class rates was prescribed by the Commission to be applicable in all freight-rate territories east of the so-called Intermountain Territory, the portion of the United States west of the Rocky Mountains. A map of the territories included in the order of the Commission is outlined herewith.

These rates are prescribed for both intraterritorial application and for interterritorial movements. The distance rates are applicable via the shortline distances between the points of origin and destination computed via the shortest railroad routes by which carload shipments can be interchanged between carriers without transfer of the lading of the cars.

The scales contain 23 classes or columns first class and lower, and seven classes or columns higher than first class. These were prescribed originally by the Interstate Commerce Commission in *Eastern Class Rate Investigation*.[1]

Pending the revision of the class rates to conform to these bases and the adoption of a uniform freight classification, interim class rates were prescribed effective Aug. 30, 1945. The interim class rates were constructed by increasing by 10 percent the then existing class rates applicable within Official and Illinois Territories, and by decreasing by 10 percent the existing class rates in Southern, Southwestern, and Western Trunk Line Territories. The interterritorial class rates were decreased by 10 percent.[2]

An appeal was taken to the Federal Courts. The District Court refused to set aside the order of the Interstate Commerce Commission, and argument on appeal from United States District Court's decision was held March 3, 1947.

This decision and order does not mean that all rates in the several territories are to be placed on uniform bases; because, without going into detail impossible here, it should be noted that the vast bulk of freight traffic does not move within or between territories at class rates. On the contrary, most of the traffic is transported at either exceptions to the classification or commodity rates.

A study of the movement of all

[1] *Eastern Class Rate Investigation*, (164 I.C.C. 314, 373), 1930; and (171 I.C.C. 484, 499), 1931.

[2] *Class Rate Investigation, 1939, and Consolidated Freight Classification*, (262 I.C.C. 447, 511), 1945.

carload freight shipments on a sample day was made by the Office of Defense Transportation. This study showed the following distribution of the total carload shipments for this day selected as a representative day:

	Percentage of Shipments	Percentage of Total Freight Revenue
At Commodity Rates	85.2%	77.6%
At Exception to the Classification Rates	10.7%	16.1%
At Class Rates	4.1%	6.3%
Total	100.0%	100.0%

Differences in the levels of freight rates and in the patterns used in constructing freight rates in the different traffic territories are usually accounted for by differences in:

1. Density of population;
2. Distribution of population;
3. Geographical characteristics of the territories — topography, climate, and other factors;
4. Types of industrial development — agricultural, extractive, manufacturing, and distribution;
5. The relative concentration or diffusion of industrial development;
6. The concentration or diffusion of sources of raw materials and supplies;
7. The location of primary and secondary markets, including distribution and consuming centers;
8. The nature of the balance or imbalance of freight traffic within the territory;
9. The nature of the predominant traffic—raw materials, semi-finished products, or finished industrial or consumers' goods;
10. The seasonal characteristics of the movement of the traffic;
11. The distances the goods must be transported to, from, or within the districts;
12. The distribution of the volume of traffic moving through the territory, overhead or bridge traffic, and the volume of traffic to or from or within the territory;
13. The nature of intercarrier competition—railroad, water, highway, or pipe-line transportation;
14. The availability of and possibilities of the development of water, highway, and pipe-line competition;
15. The policy of the carriers in establishing rates to meet carrier competition;
16. Market competition within the territories and among markets in different territories;
17. The prevailing level of labor, fuel, supply, and equipment costs in the various territories, which affect the relative costs of performing transportation services in the respective territories;
18. The economic policy of the carriers or government in the development of industries or regions; and
19. The policies of state and federal government with respect to the regulation of all types of transportation.

In special meritorious cases when the Interstate Commission finds after hearing that a freight rate or charge, rule or regulation has resulted in a violation of the Interstate Commerce Act, the Commission may, upon request or prayer for reparation, order the carrier or carriers which have received the charges found to have been unlawful, to refund or reparate the difference between the charges collected and the charges found to have been lawful. Reparation is an award of damages—a species of retroactive rate adjustment—rather than a claim.

The carriers may not pay reparation of their own volition, but must make application in the form prescribed by the Commission in its *General Rules of Practice* for permission to make the payment. In *Swift and Co. v. C. and A. R Co.*, the Interstate Commerce held that the willingness of carriers to pay and of shippers to receive reparation can be approved by the Commission only upon a clear and decisive showing of facts which would lead the Commission to award reparation to all others who might have shipped in the same period under the same rate or under substantially similar circumstances and conditions.[8]

(*Continued on Page* 83)

Controlled Distribution

(*Continued from Page* 65)

more intensively and that those embarrassed by riches will invariably dissipate their time and energy trying to skim the cream off the market.

5. The Use of Key Methods

The practical value of the scientific concept of standard practice in the sales department is well exemplified by the experience of the oil company, mentioned in a previous article. It was found, after thorough study and analysis, that there were "29 specific, simple, practical things" that salesmen should do to sell oil. No one was using more than 20; none less than 4. A high positive correlation was found between the number of key methods used and the percent of quota attained.

Further study revealed that on the average only 11 of the 28 key methods were being used. This accounted for the fact that the company, as a whole, reached only 76 percent of its quota. It was also discovered that 14 of the 29 key methods had never been identified by management and that in order to reach 100 percent of quota at least 20 of them had to be used. In addition, salesmen were made to "do" other things which actually had no traceable effect on sales volume . . .or else reduced the volume."

6. Something Not To Do.

Standard practice in a real sense can be negative as well as positive. It is likely that there is no universal precept which is applicable in all circumstances. For some years a company had supplied a certain display equipment to its dealers. It was an expensive piece and was "considered" indispensible in selling goods to consumers. No one thought to apply a yardstick and take an objective measurement of its value.

The practical store clerks, however, had it gauged correctly. They did not like it, because among other reasons, it tore their clothing, but as fast as they threw them out, the manufacturer replaced them. At last it was decided to "look at the record." Here it is:

Average Sales per Store per Month
With display equipment $4.66
Without display equipment .. $4.85

Hundreds of thousands of dollars had been wasted before management decided to get out the tape measure to see what it was getting for its money. How many more millions are being squandered because no one has thought of applying simple measurements of effectiveness? Inspiration never comes equipped with its own yardstick.

7. The Value of the Right Opening in a Sales Canvass.

In a study of agents selling store burglary insurance it was found that the usual procedure was to open with the question, "Mr. Jones, do you carry burglary insurance?" The real prospects, those who had none, naturally answered, "No." and, thus prompted, kept on saying, "No." Only 1 in 15 was sold.

One of the agents, however, opened his talk with the question, "Mr. Jones, who carries your burglary insurance for you?" This apparently trivial difference closed 3 out of 10 calls. Compare 30 percent of prospects sold against less than 7 percent; a 350 percent difference in sales by changing a few words in the opening. When this approach was made standard practice, sales went up—and stayed up.

In advertising, the testing of copy has been subject to the most scrupulous scientific research, in many cases with excellent results. But, generally speaking, the intangible nature of this function can be made subject to standard practice only with such wide degrees of tolerance that it is a moot question whether the procedure can be called truly scientific. In selling by direct mail, however, results may be directly correlated to specific advertisements giving clear indications as to the best standard practices to adopt.

Some methods of sales promotion are susceptible to direct measurement. The examples of the display cabinet in the stores and the racks for canned oil illustrate the necessity of subjecting all practices to exact measurement before making them standard.

The value of standard packaging has long been recognized. Progressive companies make scientific studies to determine the best type of package, not only for display and sales, but for filling, packing, handling, shipping and storing.

In the physical phases of distribution, effective use of standard practice has been given a great deal of attention. Since these problems most nearly resemble those of production it is natural that the need for efficiency should have attracted the engineers. Although some fine results have been accomplished, the proportion of companies adopting scientific standard practice remains small.

Public relations in essence is a form of advertising and promotion and, as such, is not susceptible to fixed standard practice. Its nature requires that it be highly opportunistic although the use of house organs and financial reports published in non-technical language has become standard practice for many companies.

In the sales office, billing and order departments all repetitive operations are subject to low cost, productive standard practice, formulated by industrial engineering.

Integration between departments may be made a matter of standard practice. Active cooperation between the sales and credit departments will facilitate the work of both. What, for example, should be the regular procedure in the case of a delinquent account; of one who takes unearned discounts; who wants extra time or dating; who makes unauthorized returns? These are sales problems as well as credit, and joint standard practice should be set up for them. It was for that reason that the credit department was put in distribution rather than in finance. To sue or not to sue a delinquent account is a delicate problem. Should the credit manager exercise his legal rights and bring suit strictly according to the book, collect his money and lose a customer? Perhaps the situation allows some flexibility whereby the assistance of the sales department would help in collecting the money and saving the account. Procedures of this kind could not be subject to rigid routine but within their limits they are profitable.

Since effective standards cannot be established without parallel standard practice, it follows that neither can be maintained without controls. Even the least efficient enterprise has standards of a sort and some kind of standard practice. Efficient ones consciously establish rigid, formal and objective methods of control by means of which standards are kept operative and methods are constantly checked. The next article will suggest several methods which management may use to gain a high degree of control in distribution—especially marketing.

Freight Rates

(*Continued from Page* 81)

The standard form prescribed by the Commission to be filed by the carriers for authority to pay reparation identifies each shipment and shows the charges which should have been collected and which were collected. It contains a certification of the collecting carrier that it has collected the charges indicated, which is concurred in by the connecting carrier or carriers. It contains also the signature of the complainant, and a statement of the Commission's order upon which reparation is based.[4]

Reparation may be awarded by the Interstate Commerce Commission for the period for which it finds such an award to be due, not to exceed a period of two years from the time when the causes of action accrue.

The party who has borne the freight charges is the one entitled to reparation. Interest charges have been held to be a proper element of the reparation award.

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[3] *Swift and Co. v. C. and A. R. Co.*, (16 I.C.C. 426), 1909; *Pacific Elevator Co. v. C. M. and St. P. R. Co.* (17 I.C.C. 373); 1910; *Sunderland Bros. Co. v. C. B. and Q. R. Co.*, (51 I.C.C. 21), 1918, and *Florida Dairies Inc. v. D. L. and W. R. Co. et al* (157 I.C.C. 271), 1929.

[4] Interstate Commerce Commission, *General Rules of Practice.*

Transportation . . .

(*Continued from Page* 75)

the last word in materials handling. As has been proven on the Great Lakes, combined shore and ship equipment has reduced the cost of freight per ton mile to the lowest figure anywhere in the world.

Shore installations will be taken up in the August issue, where terminal design will be considered here and abroad, in order to get the costs per ton mile down to the Great Lakes figure of one-twentieth of a cent.

The Flexible Tariff Act of 1930

(*Continued from Page* 76)

of the world. This free flow was regarded as especially desirable between the United States and the nations of Europe, particularly the nations of the Commonwealths of Great Britain. But when this free and easy trade was at its height it became apparent that our domestic industries could not compete with producers abroad.

Foreign industries were able to undersell us in our own field because their costs were much lower than ours. They were able to undersell us even with the added expense of transportation and the costs of packing and handling involved in shipping goods thousands of miles. Lower labor costs were found to affect every step in their processes of production and distribution. We became painfully aware that the high standards of living which had been achieved in the United States made it possible for our workers, manufacturers, technicians, and investors to compete with those who still operated under the far lower living standards of the workers in Europe, Asia and elsewhere. In this country we have the highest average level in socio-economy in the world. Those who have remained in the countries from which we came have devoted their energies not to mass improvement but to producing solitary examples of human excellence at the cost of the average. Arthur Balfour, one of the greatest statesmen Britain produced in the 20th century, stated the case in almost these words in a discussion with this correspondent in the Twenties.

Before World War I, our foreign trade was not very important. Our interest in foreign affairs was academic rather than realistic. We were self-absorbed. Except for a relatively small percentage of the nation, Europe and the rest of world presented chiefly the fascination of curious names of places, of people, and of historic events and romantic color. We were just emerging from the period when the farm and the small town supplied the bulk of our industry.

After World War I, we woke to the realization that we are the key piece in the global picture. We found that the stuff coming from all parts of the world not only reflected lower production costs, but that commodities often could not compare with our corresponding products in quality or value. Before the Underwood Act and the Fordney-Macomber Act were devitalized, we suffered a period of almost uncontrolled dumping from abroad. As a result of the flood of low-cost, low-standard foreign commodities, our factories slowed down or closed. Associated industries were adversely affected and even our farms diminished and shrank in output and number. Millions of American workers in factories, services, fields, forests, mines and waterways, were unemployed. President Hoover called a special session of Congress to remedy this condition. Congress first gave us the Smoot-Hawley Act, which again authorized the President, after consultation with the U. S. Tariff Commission, to lower or raise the tariffs, as of that date, 50 percent. But the Smoot-Hawley Act was regarded as too rigid. This led to the enactment of the Reciprocal Trade Agreements Act, and, later, the Amendment, with Section 352, which empowered the President to lower or raise the tariffs, as of Jan. 1, 1946, 50 percent lower or higher than might be accomplished by the 50 percent authorized in the Smoot-Hawley Act. The effect of this additional authority is that the President may now either raise or lower any existing tariff to an aggregate of 75 percent.

As Senator Malone and others understand the law, it enables the President, at his discretion, to adjust the tariff to the condition existing at any time in the operation of tariff relations between the United States and any country with which it has a tariff agreement. Primarily it is intended to enable the Executive to equilibrate any tariff which is unfair to American business. Assuming that in a given circumstance a foreign nation may unload in America products which will place our own industries at a disadvantage, the President may call upon the U. S. Tariff Commission to give him a report. This report is expected to inform the head of our nation concerning the wage-scale of the competing country, the costs of handling, packing, distribution, and transport, and similar expenses. The Commission also is assumed to be able to advise him about the geographical factors involved, and about the effect of climate, psychological, and racial aspects that may influence production, distribution and costs. The President is expected to be in the position to determine to what extent these details should be taken into consideration in judging what is fair to the foreign producer and what is ultimately fair to our own industry and commerce.

With this study in hand it is supposed the President may either decide to raise or lower our tariff as he may deem just. He then apparently has the power to place the foreign nation on notice that in due time the tariff, in each specific instance, may either be reduced or increased, as the circumstances may warrant. Generally speaking, it is expected the tariff usually may be increased in order to enable our own industry to operate more profitably by expanding its domestic market, thus maintaining the employment of our own people, and in this manner supporting our economy in sustaining our own higher levels of living standards. On the other hand, the flexible tariff plan also is expected to enable us to encourage the low-standard foreign nations to lift their own living standards. Obviously, the basis of such expansion may stem from the utilization of their competitive products in new ways at home, or in finding new ways and new places to sell them abroad. As Senator Malone and his colleagues see it, the greater the incentive to find more

(*Continued on Page* 89)

Let's be Quizzical

(*Continued from Page* 67)

won't disregard it. However, let's concentrate on the shipping phase for the present. How should we go about lining up our approach?"

"Most any opening can be used," answered Jack, "but we can start with the freight cars and the appliances for their loading and unloading at the plant. Therefore, what operating restrictions prevail, such as siding capacities, clearances, interferences from other operations, rights of way, etc. Then we can go on to such queries as, how are freight cars ordered, verbal or written; who places the orders; when are cars ordered; from which department of the railroad? Any inspection of cars; if so, who is responsible for the inspection; are many cars rejected on account of poor condition; do cars require cleaning before loading? What system used in loading product into cars; any restrictions on account of nature of product; any car lining used; any dunnage or bracing used; is steel strapping used? Are car seals kept in a safe place; is a record of car seals kept; who is responsible? This is merely an example of the line of exploration we could follow in regard to the freight car situation as applied to our plant."

"Compiling answers to just these few questions surely would develop some interesting and valuable facts," Foy pointed out. "Now what next?"

Reaching into his brief case, Jack brought out another typed list and gave copies to the two men, from which they noted the following:

Is the shipping department responsible for packing? Is that department equipped with modern scales for weighing? Hand and/or power trucks? conveying machinery? strapping machines? is special handling equipment used for individual commodities? In marking containers which method is used; hand, tag, or stencil? What are the duties of the shipping clerk? To whom does he report? Has the shipping department an up-to-date list of break bulk points? Are ferry cars used for less carload shipments: if so, how frequent? What is average total weight shipped in each ferry car? Is the pick-up and delivery service of the railroads used? Are freight forwarders used? In the case of carload shipments does demurrage frequently occur? Does the company have its own printed bills of lading? Are the products properly described in bills of lading? Is the 'no recourse' clause signed in the bill of lading on collect shipments? Is the route shown in bill of lading? Is the freight rate inserted in bill of lading? Outline a detailed description of the disposition of the original and all copies of the bill of lading after signed by carrier's agent. Which department prepares bills of lading? Are bills of lading typed or hand written? What method is used in issuing and filing express receipts? Are all parcel post shipments insured?

"There you have an illustration of the primary questions to use when surveying shipping practices," Jack added, "but almost every one of them could be further broken down into sub-items."

"We're going to take action," exclaimed Foy. "I'm convinced we have been overlooking an opportunity to increase efficiency and reduce costs by taking packing and shipping for granted. How should we undertake to make an examination of the type we have been discussing? Also, what department should handle it?"

"First," Jack said, "explain to each official and department head of the company exactly what you are planning to do. Then assign to the general traffic department the job of making the survey and submitting a report of its findings. After that, work out cooperatively any modifications which are found to be desirable."

"Can it be done as easily as that?" Wood questioned.

"Just about," promised Jack, "although all concerned must understand that time, patience, and perserverance are required in developing any change.

Chicago Packaging and Handling Show

The 2nd Annual Industrial Packaging and Materials Handling Exposition, held in Chicago, April 29 through May 1, under the auspices of I.P.E.A.A., highlighted forum discussions of modern trends in scientific materials handling and product protection.

SCIENTIFIC materials handling and product protection as a means to more efficient and economical distribution was the keynote of the Second Industrial Packaging and Materials Handling Show at Chicago. The exhibits, which numbered more than 60 and exemplified current developments and trends in packaging, materials handling and associated industries, were unusually well attended. Forum discussions were concurrently held by the packaging and materials handling sections, during the course of which many notable addresses were made. A special event was a loss and damage prevention program produced jointly by I. P. E. A. A. and the Midwest Shippers Advisory Board in cooperation with The Chicago Assn. of Commerce and Industry; the Traffic Club of Chicago; the Junior Traffic Club of Chicago; the Freight Claim Division of the Assn. of American Railroads; the American Trucking Assns., Inc.; and the Railway Express Agency, Inc. A banquet was held on the last evening of the show with R. F. Weber, president, International Harvester Co., and head of I. P. E. A. A., presiding. Dinner speakers included Ralph Budd, president, Burlington Lines, who discussed scientific product protection and materials handling as a new factor in transportation and distribution economics; and Hon. James D. Arrington, mayor, Collins, Miss., who spoke on the topic, "Defrosting America's Frozen Assets."

Handling Sessions

The materials handling sessions, under the chairmanship of A. H. Dobler, Yale & Towne Mfg. Co., discussed current trends and techniques in this field. William E. Braithwaite, Division of Simplified Practice, National Bureau of Standards, made an outstanding address on simplification and standardization of containers and packages for improved materials handling.

The application of fork trucks and pallets to railroad operation was the theme of an address by J. W. Cockrill, district storekeeper, Illinois Central Railroad. The railroads, Mr. Cockrill stated, are taking advantage of the various types of tractors, cranes, trucks, motorcycles, platform lift trucks, and similar labor aiding devices available to them.

The past and future of materials handling was outlined by Norman L. Cahners, president, Materials Handling Laboratories. There is an increasing awareness, Mr. Cahners said, of the need for standardization in the materials handling field and stressed the need for the active cooperation of trade association within each industry for the realization of this end.

The term "unit-loading," J. G. Bucuss, strapping division, Acme Steel Co., told the materials handling section, has come into very common use but it frequently means different things to different people. "To those of us in the strapping industry," he said, "the trademark name 'Unit-Load' has a very definite meaning. It very clearly describes the bracing of freight in railway cars under the floating load principle. This is accomplished by strapping together two or more packages into a larger unit inside the railway car in such a manner that the larger unit is permitted to move under shock or impact. As a result of this freedom of movement the force of the impact is reduced approximately 50 percent.

The operation of a national pallet pool, whereby pallets would be rented to shippers and consignees throughout the nation, was described by D. I. Pursley, vice president, Lawrence Pallet Exchange. The operation of this pool was illustrated by means of a movie film. Mr. Pursley's remarks made it increasingly clear that the idea of a nationwide pallet exchange has stepped out of the realm of theory into the world of practical business. According to Mr. Pursley, the pallet pool, which is soundly financed and staffed by some of the best materials handling engineers in the field has developed a plan which should make the palletized load the basic unit of shipment throughout the country. The operation of this pallet pool was described in detail in the Nov., 1946 issue of DISTRIBUTION AGE.

Packaging Sessions

The commercial application of unit packing techniques developed and employed so successfully dur-

(*Continued on Page* 88)

Packaging Contest Winners

Winners of the Protective Packaging Competition were as follows: First Award carrying a Blue Ribbon and a cash prize of One Hundred Dollars was won by R. J. Bauer of the Seeger Refrigerator Co., Evansville, Ind., for the packing of a refrigerator condensor unit in a wirebound crate. Second Award carrying a Red Ribbon and a cash prize of Fifty Dollars was won by W. J. Delahanty, Burroughs Adding Machine Co., Detroit, Mich., for the packing of a Burroughs Electric Duplex Calculator in a corrugated box with interior cushions of rubberized hair pads. This same package is utilized for export shipments when packed in an exterior wooden box with a waterproof case-liner. Third Award carrying a White Ribbon and a cash prize of Twenty-five Dollars was won by B. W. Adamski of Sears, Roebuck & Co., Chicago, for the packaging of an eight piece pottery kitchenware set in a corrugated shipping container with corrugated inner partitions.

Packaging Program . . .

(*Continued from Page* 29)

as a sample-making table by many corrugated carton manufacturers. From the flat stock, cartons are made in the desired quantity and size to meet daily requirements.

Small quantity folding and set up boxes also fall into the difficult to procure class. As a rule, orders for folding boxes must be even larger than those for corrugated cartons. This problem was solved in turn by using metal edge set up boxes. In addition to the excellent grade of board used, which is grease and water resistant, the user has the advantage of storing the die cut flats as they are received from the vendor and assembling the boxes as they are needed, day by day, by means of a metal edge stayer machine. (Fig. 6)

These boxes were designed with the N.A.A. emblem "all over" design, further enhanced by the addition of a Navion label when used for Navion spare parts. Boxes are used also for shipment of army and navy spare parts by the addition of a label required by the services. (Fig. 7)

There are many good specifications for carton and boxboard materials, but the final proof is the testing of the package. Fig. 8 shows one method used by N.A.A. in which packages are subjected to a 50 foot-pound impact test. Testing of the completed package is vital and cannot be over-emphasized.

The corrosion preventive methods used prior to actual packaging are similar to those developed in the last five years by the packaging industry as a whole and embody the use of petroleum base coating materials, strippable plasties, sealed moisture barriers and dehydrated packages using a desiccant included in a moisture-impervious container. Cleaning the parts prior to preservative applications is accomplished by using a "two step" Stoddard solvent wash, plus a methanol rinse and is performed in a specially constructed booth. (Fig. 9.)

(*Continued on Page* 88)

Packaging Show

(*Continued from Page* 86)

ing the war was a major topic at the packaging sessions. Contrary to the belief of many executives in industry and distribution, the ending of hostilities has not diminished the importance attached to scientific unit packaging. This fact was emphasized in a forum discussion of current techniques of cleaning, corrosion prevention and protective wrapping. Folding cartons and set-up boxes also were major topics to be brought under the Exposition spotlight.

Under the chairmanship of M. A. Roberts, Insurance Co. of North America, a session was devoted to a discussion of export packaging and its relation to marine insurance. Poorly packed or packaged shipments are not only reflected in higher insurance rates but are a real economic loss to both the shipper and the receiver, it was pointed out by A. V. Plotner, president, General Traffic Service Co. Discussing various types of containers used in export shipments, Mr. Plotner said: "From complaints we have received from steamship companies, it appears that a chief objection is to the use of fluted or corrugated fibreboard cartons. The contention is that corrugated fibreboard is subject to moisture absorption which weakens the rigidity and stacking quality of the container so that it cannot be stowed properly, tends to break down easily, with the result that there is damage to the goods or loss of the contents. Another objection to the use of cartons is that they are improperly sealed. Gummed tape is quite often applied in a cold warehouse and the adhesive quality of the glue is impaired so that when the shipment passes through a warmer climate the glue loses its hold, with the result that the package opens up and is an invitation to pilferage and damage."

The practical application of engineered export packaging was the theme of an address by Frank W. Green, packing consultant. "Too many shippers," Mr. Green said, "fail to use proper consignee markings, with the result that many non-deliveries and mis-deliveries are frequently reported as pilferages. Much actual theft," Mr. Green pointed out, "could be eliminated if shippers omitted all identifying names, trade marks or indications of contents. Blind consignee markings can be used if desired, provided the port marks are clear. Bold cautionary marks such as 'This Side Up,' etc., should appear in English and in the language of the country of destination."

Discussing the wooden box industry, William H. Sardo, Jr., secretary, National Wooden Box Assn., stated that the industry in 1946 utilized about 5½ billion ft. of lumber for the production of wooden boxes, crates, shook and dunnage, and based on production for the first four months of 1947, there is every indication that the industry will consume close to 6 billion ft. this year. Certainly these figures do not show that the nailed wooden box industry is either dead or dying, but is rather growing in stature."

North American's Packaging Program

(*Continued from Page* 87)

Another packaging phase to which particular attention must be given, is cleated plywood and nailed wood boxes. Large, lightweight, and from a packaging standpoint, low strength parts, present a complex problem in the method used to attach the part to the box interior. One method, developed by means of drop tests, (Fig. 10) and incline impact tests, (Fig. 11) consists of attaching the part to one surface of the box only, by means of steel straps or bolted cradles. (Figs. 12 and 13.) End thrust movement is controlled by various means, but in each case, effort is made to tie back to the cradles, rather than to any other portion of the box. This packaging method accomplishes the primary aim of "two point suspension" which minimizes intransit damage due to racking and box distortion.

Regardless of the packaging method used, testing of the completed package again is a vital factor and should be given careful attention before the package design is considered satisfactory.

Railroads and other common carriers have initiated a program of employe education in freight handling, loading and related subjects, in an effort to reduce damage claims and present improved service to customers. With this handling improvement, package cost may be somewhat reduced by a slight reduction in box and crate "beef." "Beef" was added during war years to offset the inexperienced help and poor handling conditions due to the enormous increase in freight traffic. Bear in mind, however, dependence for safe delivery of your product cannot rest with the carrier, if no thought to container design is given in your plant prior to shipment.

Minimizing damage claims reduces shipping delays. In addition, savings are brought about through reduction of costly paperwork.

North American has set up a packaging engineering department which designs, tests, and evaluates carefully each package before releasing for construction container drawings such as Fig. 14 for corrugated cartons and Fig. 15 for cleated plywood boxes.

Fig. 16 shows only ¼ of the floor space devoted to the packaging and shipping facilities at N.A.A. Highly skilled personnel and careful workmanship are considered basic necessities if good packaging and packaging methods are to be attained, and the fine line between under-packaging and over-packaging is to be drawn.

Keep in mind the old adage, "You may scrap a product in its raw material stage, you may scrap a part in its finished form, but the loss of a packaged part is the greatest loss of all, for you lose not only the product, but the cost of the packaging as well."

Flexible Tariff . . .

(*Continued from Page* 84)

outlets at home, the greater will be the effect upon the living standards of the people who produce the commodities abroad. As wages rise in low living standard countries the more they will be able to absorb of their own goods, and the greater use they will be able to make of their own facilities and resources. Our Senators believe that eventually this plan will operate to place many of the foreign nations on a level that may comparably be likened to our living standards. The thought is that when they are able to consume a larger part of their products at home there will be a smaller percentage left to ship to us and to others.

When a foreign nation attains such an equilibrium, our tariff logically will drop down to a point where it is almost negligible. Obviously, the less the other nation has to sell outside of its own borders of certain goods, the less reason there is for us to maintain a protective tariff. Senator Malone's backers believe that under relatively ideal conditions a foreign nation would ship to us the things we either do not have at all, or things of which we have very little. In either case we would scarcely place a heavy tax on something we want; to do so would only add to our cost of acquiring desired commodities.

Senator Malone, and those who think as he does, hold that it may be good business for our country, through its government, to supply foreign nations with every aid to bring about the result the flexible tariff is designed to achieve. They think it would be wise for us to send them technicians who may be able to effect improvements in production methods, and who may counsel them in equipping their plants with the facilities and machinery which have brought expansion to our socio-economy at home. They have in mind that we could well afford to share with foreigners our knowledge of methods of distribution, packing, packaging, warehousing, finance.

$40,000,000 Packaging Program

(*Continued from Page* 22)

The package engineer, he stated, should know at which point in the manufacture of an article the package is applied. In the manufacture of radios, the cabinet may be made in the plant of a subcontractor. Hence, the engineer must understand production methods and problems in many different manufacturing operations. Again, factory redesign may be necessary. For example, Ward's analysis of the packaging for a rotary barrel pump disclosed the use of a cumbersome, long package with most of the weight concentrated at one end and requiring much interior packing. However, by cutting the 40-in. length of pipe into two parts and adding a coupling, the total package weight was more evenly distributed. Packaging costs were decreased and shipping and warehouse space was reduced by 50 percent. Ward's package engineers must be alert and creative.

Often the cheaper package is not the most economical. "Our experience in hundreds of cases," stated Mr. Witte, "has proved that often it is economical to spend an extra 5c. or 10c. for packaging materials if we can thereby reduce the man-hours necessary for practical application. A good package engineer need not be an experienced time study man, but he should have a working knowledge of engineering methods."

The good package engineer must also be something of a market analyst . . . He must determine the quantity of any given item which the customer normally buys. For a package to be sound, it must correspond with the average customer demand. To illustrate this point he mentioned the trade practice of packaging specific products. About 70 percent of the automobiles in the United States are six cylinder cars and about 20 percent are eight cylinder cars. However, spark plugs are normally packaged in groups of ten in display boxes which carry the manufacturer's sales story. Thus, it is probable that not one-half of one percent of the sales transactions involving spark plugs call for a unit sale of ten. Hence, most of the spark plugs must be wrapped separately. This means additional wrapping, and from the customer viewpoint, the sales message on the display box is almost entirely wasted.

Additional requirements of a good package engineer, Mr. Witte cutlined as follows: "The engineer must understand handling methods and the possible savings from palletization where this method can be used. At Wards, we give special attention to the 'multi-unit load.' For example, in shipping 10,000 boxes of hats, the question is—shall we handle 10,000 units into the cars, cut of the cars, into the warehouses, out of the warehouses and into the retail stores? Or shall we steel-strap five of these boxes together and thereby reduce the 10,000 units to 2,000? This is a good illustration of proper materials handling."

A good engineer must, of course, guard against the expense of overpacking. He must know whether the item will be shipped via rail, truck, air, carload l.c.l., or by combinations of these means, or whether it will be handled by one common carrier or entirely within the company organization. He must have a working knowledge of the weaknesses or advantages of all transportation facilities. He also must have a knowledge of the current operating problems of the outlets to which his packages are destined. Among these problems, the most common one is "shrinkage," which may include such sub-heads as loss from pilferage, soilage, spoilage and miscellaneous losses resulting from improper packaging or classification.

The engineer must bear in

Up ↗ . . . or Down ↘ . . .

A new materials handling device, an all-steel inclined belt conveyor, has been introduced by Steel-Parts Mfg. Co., Division of Blackstone Mfg. Co., Chicago.

The conveyor, called the "Escavayor," is said to be an efficient answer to the problem of moving articles from floor to floor, to a higher point on the same floor, into a hopper, or to another conveyor. Its movement is reversible. It can be used for loading trucks from a loft on a higher plane as well as for unloading, and it can be equipped with slide-preventing baffles for incline angles of over 14 deg.

mind that a package is more than a silent salesman. "A package," stated Mr. Witte, "can be made a star salesman with the best selling story in the world, because it tells exactly the same story every time and tells the story you want it to tell. Also, in conjunction with the sales story, the engineer should be familiar with display area and facilities of the retail outlet."

Mr. Witte recalled as an illustration of the above point, that one of his package engineers had designed a package that was seemingly perfect. When the package was checked with Ward's retail display department, it was found that three of the packaged items could be displayed in the alloted space. However, by shortening the width of the box by ½-in, *four* packages could be displayed, thus increasing the display space by one-third.

Montgomery Ward is conveying its ideas and plans for new packages to the manufacturers through the use of Merchandise Preparation Standards. These standards are gradually being extended to every merchandise item distributed by the company. The standards show detailed drawings of different perspectives of the package including the final assembly. Precise measurements and details are shown, supplemented by concise instructions. Ward's package engineers, likewise, are draftsmen and they each produce their own Standards.

The Ward package surface designs and merchandise literature pieces follow definite established principles, designed to identify in family groups the merchandise packaged under Ward's name. This practice, in contrast with the departmental approach previously used, has gained wide acceptance among other associating national distributors of merchandise.

In general, the new Wards packages are in one color with reverse white lettering. In family groups where different qualities are represented, quality of the merchandise is designated by an encircling color band with the quality stated within the color band. At the top of the package is the statement of contents, and below that the quality band. Centered on the vertical axis in the visual center is the name of the product, followed by any necessary description. At the bottom is the company signature. Colors have been designated on the basis of customer color preferences and classified by groups of merchandise rather than by departments. The reverse side of the package is tied in with Ward's fact tag program and carries the reproduction of a fact tag. This practice makes possible a considerable savings in the use of loose fact-tags on packaged merchandise. Fact tags, however, are used extensively on unpacked merchandise. Additional pieces of merchandise literature for customer information are owner's guides, instructions and care booklets and inserts, wall cards, etc. The copy is written, layout and art work executed, and printing production directed by the merchandise preparation department.

Carbon Copy Transportation

(*Continued from Page* 38)

ment of the railroad as such became rapid but the emphasis was mainly on the physical characteristics and little on the economic precepts by which they would be run. It was only natural that it should be so for their development was paralleling that of the nation itself with the unstability rife during such a period.

The decade of greatest growth of the railroad was in the 80s. In 1830 there was not more than 22 miles of rail in use, but by 1890 nearly two-thirds of our present mileage was in existence. The peak was reached in 1916 when we had 254,037 miles of railroad in the United States. Since that time our mileage has decreased.

During the first world war motor trucks came into being. To many this was a new thing, a super development. Actually it was based on the same transportation structure as the railroads. Instead of starting from scratch the truck operators followed the path of least resistance. Their classifications and rate structures were copied from the railroads, they became so closely competitive that their very rates were almost on an even par. It is undeniable that this competitive factor worked reciprocal benefits; for the threat of trucks spurred the railroads on to greater activity while the truckers were fighting an uphill battle to take some of the traffic from them.

But none of this was new nor were there startling developments as is generally conceived. So engrossed were the truckers in their attempts to divert traffic that they paid little heed to their inner functions, the economic structure and policies into which they were falling. Too late, it was realized that they had inherited all of the policies and systems developed and handed down by the railroads.

The railroads and the truckers functionally are as alike as two peas in a pod. We have gained nothing but speed and a road without rails. All else is the same.

Then came the plane, air travel and air freight. Certainly, here was a new form of transportation, a chance to make the necessary reforms; an agency that as recently as the summer of 1945 had not yet determined what its tariff form should be.

They had the world to work with, and as guidance a chorus of thousands of voices raised in criticism of the old systems and pleading for a new, a revolutionary, clean cut transportation policy. Here was a chance to develop new systems of classifications, a thing which the railroads 100 years old were still trying unsuccessfully to do, plus a system of uniform rate making.

There is no question but that the airlines motives were sound, but again the competitive angle crept in, and less than a year later, in the summer of 1946, they were involved in a rate war which precluded any attention to a scientific and cooperative air transport policy.

Any attempts to formulate a clear simplified classification were soon dispelled by the usual amendments and supplements brought about by the competition of other carriers. Gradually, the airlines are, and we say are because they are still in their embryonic stages, drifting toward the path of least resistance followed by the two other carriers.

In many respects, federal and state administrative bodies largely are responsible for the conditions that exist today. They have failed to realize that the economic principle of supply and demand relates to transportation as well as to other business.

Take the case of the airlines. From the conception of air cargo each line had different pick up and delivery provisions, different valuation principles, different tariffs and classifications. But, if in the beginning, the CAB had brought all carriers together and had them agree on one common classification and one tariff we would not be in the situation we are now. In addition to this, if the CAB had set a firm and reasonable competitive schedule there would be no rate war in evidence. What would have evolved would have been one cooperative yet competitive airfreight system from which each airline would obtain its just compensation for services rendered, with rates high enough to afford a fair margin of profit. A traffic manager's choice of carrier would depend solely on service.

Truckers also could have followed this pattern of development but did not. The result is that all have followed the unsatisfactory pattern of the railroads, inheriting and accepting its faults and mistakes, so detrimental to our national transportation policy.

We have used the phrase, "national transportation policy" and "national transportation system" in our discussion only because we can find no better phrase to express our wishful thinking. Actually we have neither a national transportation policy or system. It is not only unfortunate but detrimental as well to our nation's business that our predecessors in transportation could not have been more farsighted and more systematic.

What the outcome will be is problematical. Already the airlines are beginning to realize their mistake and are making plans for at least a "national airfreight policy." For the railroads and truckers to change now will take years of confusion. That a drastic change is needed is undeniable, but in the meantime American business will suffer considerably from this decentralized transportation control. It remains for us as traffic managers and transportation men to do everything in our power to force transport agencies to accept and make these necessary changes. Progress has been made in almost every field but transportation. Transportation is slowly choking itself to death, a carbon copy death of ineptitude.

Why Wirebounds Are Winners

(*Continued from Page* 60)

purchasing agent, Seeger Refrigerator Co., Evansville, Ind. It is used to ship that company's refrigerator condenser units.

The company uses two sizes of wirebound crates of the same basic design that it has used for 15 years —a 17 lb. crate for an 85 lb. condenser unit and a 29 lb. crate for a 100 lb. unit. No nails at all are used in making, assembling, or closing either crate. Each consists of only three pieces—the top, the bottom, and the four wirebound wrap-around sides that come in one piece and are already fitted with the cleats that actually carry the load.

Packing is simple. The condenser unit is slid by one workman from the end of the conveyor onto the cleats. The door-like side of the crate then is closed quickly with rock fastener wire loops and the package is ready to be shipped.

Loaded crates can be stacked five high without damage to the under crate, they permit quick and easy testing or inspection of the condenser units without removing them from the containers, and the crates are reused—each makes an average minimum of three trips, although some made as many as six trips during the era of wartime shortages.

The Seeger Refrigerator Co., according to L. F. Funke, chief engineer, has investigated and experimented with other types of containers, but never has discovered any to equal wirebounds for its needs.

The Kyle Corp. of South Milwaukee, Wis., was compelled during the war, because of shortages, to change from wirebounds to other types of containers to ship its oil circuit reclosers throughout this country, and to Canada, Mexico, and South America.

For more than a year, however, it has used wirebound crates specifically engineered for its products. The result has been a substantial reduction in the number of damage claims resulting from failure of shipping containers, according to corporation officials.

The design of the wirebound crates enables the 65 lb. single phase recloser or the 275 lb. triple phase recloser to be kept upright at all times while in transit or storage. While using wartime substitute shipping containers, the company suffered damage claims as a result of the containers being placed upside down, thus causing oil to leak out of the bases of reclosers and porcelain bushings on top to be broken. A recloser in a wirebound crate is in full view so the possibility of it being placed upside down is reduced considerably.

Speed in packing also is a factor in this company's choice of wirebound crates. The entire packaging process is completed in less than three minutes by one man.

At the Port Chester, N. Y., plant of the Homelite Corp., manufacturers of several types of hand-portable gasoline-driven generators, pumps, and blowers, a change to wirebound boxes resulted in an estimated annual saving of $8,700. This saving consisted of $4,300 in direct cost of containers, $1,800 in freight charges as a result of the relatively light weight of the wirebound box and $2,600 in labor required to pack the company's products in shipping containers.

This wirebound box is an excellent example of the versatility of this type of shipping container. It is made to be suitable for carrying each of several different types and sizes of Homelite units.

In comparison with the container formerly used, the wirebound box reduced the container or tare weight from 80 to 45 lb., reduced container cost by about

(*Continued on Page* 97)

Product Protection

(*Continued from Page* 63)

trucks and reduced the cube enough to affect a considerable reduction per truck. Again in 1945, we further reduced the cube and reduced the sheathing, which affected a further reduction per truck. Later, we considerably reduced the cost on this model per truck by removing the diagonal bracing from the chassis box. Comparable savings have been made on other models."

In the field of corrosion prevention, it was reported that research was being conducted with about 25 different suppliers. A reported recent development was a "peel film" which is transparent and can be handled without messiness. It was emphasized that, in addition to the needed surface protection, the use of this film also would be of interest to consumer relations because it adds "merchandise appeal."

The increased use of lighter test or not-test corrugated cartons, and of light solid fibre cartons and folding cartons, was assisting in the uniformity of packaging and in improved identification. These new cartons added automatic sealing, simplified packing in exterior containers, improved customer merchandise appeal, and facilitated palletization.

Research in the use of exterior containers had covered nailed wood boxes, wirebound boxes, cleated plywood boxes, and high-test corrugated and solid fiberboard cartons. This research had resulted in packing cost reductions and materials handling economies.

One of the results had been the revision of lumber-use standards and economies in crating, especially for export. One step was the procurement of a thinner lumber for sheathing. This thickness requires the cutting of rough out of the logs, then re-sawing and dressing only one side to obtain the proper dimension. This change had made possible a saving in crating cost; which was an important item, considering the large annual use of lumber for crating.

In export shipping, when lumber was more plentiful, the company used a box weighing 80 lb. with inside dimensions of 36 in. long, 22 in. wide, and 11 in. high. Then came the use of an improved "style 2" box weighing 60 lb. Then came the development of another type of box weighing 25 lb., which carried the same quality and considerably reduced cubic displacement. In some instances, IHC is using for domestic shipments a reinforced carton with the same inside dimensions.

Tests have indicated that for every wire or band reinforcement on a box or carton, the thickness of lumber can be decreased about 10 percent, to a minimum reduction of about one-half the original thickness. The company has standardized on the griplock type of wire, both from an economy and service standpoint. It also has standardized on the coated nail of the corker or similar type. The laboratory tests indicate that coating on nails will increase their holding power by 65 percent.

At materials handling conferences, a great deal of attention has been given to loading, as related to product protection and handling economies. The importance of this subject is emphasized by the fact that during each year the manufacturing activities of the company require the shipping out of many thousands of carloads and truckloads of materials.

At the one conference, a definite need was reported for the development of an IHC "loading manual." The company loading committee has been at work on such a manual. This committee consists of representatives from the traffic department, the manufacturing department, and manufacturing research department; and one loading foreman from each company division.

How Avacodos Are Packed

(*Continued from Page* 53)

Methods and Policies of the Calavo Growers of California (E. A. Stokdyk). Many of the policies and practices discussed are useful guides for other perishable agricultural industries.

Rail and truck shipments now are used, with choice between the two influenced by distance to destination and the kind of service available. Air transportation will merit consideration if future rate structures are reasonably in line with ground transportation costs.

Protection of avocados in transit is an important activity in Calavo's traffic department. Avocados are very sensitive to extremes of heat or cold and to atmospheric quality. In order to avoid premature softening or outright spoilage, the fruits require controlled temperature and humidity conditions in transit and in storage. Weather reports from all parts of the country govern the instructions issued to carriers. Each car is followed from the shipping point to destination, and detailed arrival condition reports are prepared on each car by the destination receiving office. These reports, analyzed in conjunction with the conditions under which the shipment moved, form the experience file which is constantly used to improve shipping methods.

During the war, claims for damage in transit were far above normal. Rough handling under then prevailing conditions, along with the use of inferior quality shook, accounted for most of these claims. The situation now is much improved.

Mechanized Handling

(*Continued from Page* 48)

truck or crane to the end of the bay which adjoins the driveway, and where a continuous line of vehicles is engaged in loading operation.

The check-off "work sheet" is then sent to the shipping room where it is matched with the original charge. Shipping papers are prepared. These may be bills of lading or, when the principal carrier performs local deliveries, a list of packages, weights, and consignees. Use of the unit system dispenses with the necessity of writing separate bills of lading. The carrier secures the customer's receipt on a "delivery sheet" (duplicate copy of the original order). The papers are then turned over to the dispatcher who arranges loading on the carrier's truck.

In all warehouse operations, mechanized handling is used wherever possible. In addition to lift trucks, mobile and overhead cranes are used. A rail spur extends into the warehouse and box cars are loaded by means of the mobile and overhead cranes. The warehouse accommodates several cars and it is served by two of the transcontinental lines.

The stock rooms house a wide variety of industrial supplies, mechanics' tools, etc. The stock room clerk, whose duty it is to assemble the material, receives orders from the dispatcher at the tube station. Each clerk has a cart and a supply of small bags and envelopes for small tools and supplies. In filling orders, stock clerks move along the various aisles between the stock bins and then to the packing department. Here the material, along with the "work sheet," is placed in open-back bins. A checker then takes over to ensure that the goods correspond with those designated on the "work sheet." He then transfers the checked material and the initialed "work sheet" to the packer's bench located immediately behind him.

The next operation is that of packing. After merchandise is weighed, packed, and checked against the "work sheet," the completed package is placed in a hand-operated box truck for transfer to the loading dock. The "work sheet," on which the weight and description of the merchandise has been noted, is picked up by the shipping department (located between the packing room and the loading dock). Then, as in the case of the warehouse operation already described, bills of lading or package lists are prepared.

To facilitate loading, shipments are segregated on the dock. Different sections are set aside for shipments to be called for, for local deliveries, and for shipments beyond local delivery areas. The dispatcher attends to final delivery to the carrier. Transportation is effected by common carrier, contract carrier, and leased trucks. In the case of local deliveries, trucks loaded in the afternoon deliver on the following morning and shipments loaded in the morning reach their destination in the afternoon. Leased trucks constantly stand by for emergency deliveries and rush orders.

Prompt delivery is a company policy. Parcel Delivery Service pick-ups are made twice daily. Constant over-all supervision ensures that there shall be no interruption in the flow of traffic.

The distributor fills the gap between the producer and the ultimate consumer. In effect, he declares "We will keep a running inventory of all your needs. Call on us, and with the latest equipment, modern methods, and efficient well-trained personnel, we will meet your requirements and deliver the goods."

New Casters

Market Forge Co., Everett, Mass. announces production of new aluminum-wheeled casters. Wheels on these casters are made of aluminum alloy with higher tensile strength than cast iron. These aluminum alloy wheels are said to have several advantages over other types of wheels, both metallic as well as non-metallic.

People in Distribution

Harold C. Emerson, general manager, Cumberland Warehousing Corp. is secretary and treasurer of the newly created New Jersey State Assn. of Refrigerated Warehouses.

Fisher G. Dorsey, Patrick Transfer & Storage Co., Houston, Tex., has been elected a director of the reorganized United Van Lines at a recent meeting of that group in St. Louis.

George B. Bennett, Bennett Storage & Moving Co., Ft. Worth, was selected president of the Fort Worth Movers Assn. at a recent mass meeting held for the purpose of reorganizing the moving and storage industry of Fort Worth. **C. E. Walker,** Bradford Transfer & Storage Co., was elected vice president of the new organization, and **C. L. Courtney,** Bekins Van & Storage Co., was selected secretary-treasurer.

The Board of Directors of the Haslett Warehouse Co. elected the following officers: President, **S. M. Haslett, Jr.;** vice president, **P. E. Haslett;** vice president and general manager, **J. W. Howell;** vice president and secretary, **B. B. Haslett;** vice president and Oakland manager, **Hyland H. Hinman;** assistant secretary, **Don Haslett;** treasurer, **E. M. Cooley, S. M. Haslett, Jr.** has also been elected director of the board, American Chain of Warehouses.

Carl E. Bauermeister, Sr., is president of the newly incorporated Highland Warehouses, Inc. Other officers are: Vice president, **Charles W. Bauermeister,** and secretary-treasurer, **Carl E. Bauermeister, Jr.,** both sons of the president. (Wimner).

C. Courtney Seabrook, vice president, Seabrook Farms, is the new president of the National Assn. of Frozen Food Packers.

O. C. Price, Jr. was appointed sales promotion manager, International Harvester Co., Motor Truck Div., New York City Sales District.

Borg-Warner International Corp. has named **Olaf Haug,** veteran export sales representative, as the corporation's automotive representative in continental Europe and Scandinavia.

Newly elected members of the Committee for Economic Development Board of Trustees are: **Henry P. Bristol,** New York, president, Bristol-Meyers Co.; **S. Sloan Colt,** New York, president, Bankers Trust Co.; **John M. Hancock,** New York, partner, Lehman Bros. and former member, United States Delegation to the United Nations Atomic Energy Commission; **Francis T. Spaulding,** Albany, N. Y., Commissioner of Education of the State of New York, and former dean, Graduate School of Education, Harvard U.

B. D. Davidson, vice president, The Davidson Transfer & Storage Co., Baltimore, will attend the Inland Transportation Conference to be held at Geneva, Switzerland, by the International Labor Organization. Mr. Davidson was nominated jointly by the U. S. Chamber of Commerce and the National Assn. of Mfrs., after consultation with the American Trucking Assns., as one of the two transportation employer representatives at the meeting. **Daniel P. Loomis,** executive director, Assn. of Western Railways, Chicago, will be the other transportation employer representative.

Transportation workers' representatives attending the conference will be **H. W. Fraser,** vice chairman, Railway Labor Executives Assn. and **O. J. Mischo,** international secretary-treasurer, Amalgamated Assn. of Street, Electric Railway and Motor Coach Employees of America.

Attending the conference as United States members of the Inland Transportation Committee will be **Comm. William J. Patterson** of the Interstate Commerce Comm. and **Harry Weiss,** director of the economics branch, Wage and Hour and Public Contracts Divs., Dept. of Labor. The American delegation will have with it advisers from the Bureau of Labor Statistics, the American Embassy in Paris and the office of the U. S. Military Govt. in Berlin.

Dean J. Hanscom has been named to the newly created position of western traffic manager for Northwest Airlines.

Upon his return from So. America as a special representative for Braniff International Airways, **Jess B. Bennett** has been named assistant to the president.

C. F. Messenkopf has been appointed general traffic manager of Railway Express Agency, New York, succeeding **R. S. Wheeler,** who will assume new duties as special assistant to the vice president in charge of traffic. Other appointments in the Traffic Department are: **C. B. Williams,** formerly assistant to vice president, appointed traffic manager, succeeding Mr. Messenkopf; **O. G. Swensen,** formerly assistant traffic manager, appointed assistant to vice president, succeeding Mr. Williams; **J. R. Rohrer,** formerly general agent, Denver, Colo., appointed assistant traffic manager, succeeding Mr. Swenson.

John A. Sloan, formerly district manager of the Des Moines, Ia., Branch, will serve in the same capacity at Mack-International Motor Truck Corp.'s Chicago branch. **A. L. Monck,** formerly of Mack's St. Louis branch, has been named district manager in charge of the company's Des Moines branch, succeeding Mr. Sloan. **W. T. McCurdy** was appointed district manager for the States of Tenn. and Ark.

Lyon Van & Storage Co. has opened a new van line terminal building at Jefferson and Fairfax, West Los Angeles, with facilities to service Lyon's fleet of over 100 vehicles. The new situation will enable rapid distribution of inbound freight to Culver City, Beverly Hills, Hollywood and the beach areas.

OBITUARY

S. M. Haslett, Sr., 83, president, Haslett Warehouse Co., San Francisco. He was president of the Warehousemen's Assn. of the Port of San Francisco, a past president of the Calif. Warehousmen's Assn., and an honorary life member of the American Warehousemen's Assn.

G. F. Nieman, president, Union Storage Co., Pittsburgh, Pa. He had been president of the American Warehousemen's Assn.'s National Assn. of Refrigerated Warehouses Div., and was general president of the American Warehousemen's Assn. until 1940.

Merle Fullerton, operator Fullerton Transfer & Storage Co., Youngstown, O., past president of North American Van Lines, Inc. and chairman of board of directors.

By LEO T. PARKER
Legal Consultant

Getting down to Cases

IN Du Quoin Packing Co. v. Bonifield, 71 N. E. (2d) 173, Ill., it was shown that a common carrier, without refrigeration, accepted skinless sausage for transportation. In holding the carrier liable for value of sausage which "spoiled," the court said:

"It was the duty of defendants (carrier) to provide all suitable means of transportation and to exercise that degree of care which the nature of the property required to protect it from loss and damage . . ."

Liability

In Chicago & N. W. Ry. Co. v. Sunripe Products, Inc., 71 N. E. (2d) 184, Ill., it was shown that Sunripe Products, Inc. purchased several cars of prunes through a Chicago broker from a California seller. In subsequent litigation the higher court held Sunripe Products, Inc. liable to the carrier for the freight charges, notwithstanding that the consignor and not Sunripe Products, Inc. was named as consignee in bills of lading.

Not Certain

In Ginsburg v. White, 50 Atl. (2d) 644, N. J., it was disclosed that Ginsburg signed a contract to purchase from White a portion of the latter's certificate of public convenience and necessity issued by the Interstate Commerce Commission. The contract did not state what should be done to give practical effect to the words "of sale." The court held the contract indefinite and that it lacked certainty required for specific performance of the contract.

This means that unless a contract of this nature is complete in all details, neither party can compel the other to comply with its terms.

No Power

In United States v. Seatrain Lines, Inc., 67 S. Ct. 435. The Supreme Court has held that the Interstate Commerce Commission has no power to revoke a common carrier's certificate of convenience and necessity for the transportation by water of merchandise and commodities. This court also held that a carrier which has a certificate of convenience and necessity for the transportation by water of commodities may transport freight cars in which the merchandise being shipped is stored. This higher court held that although by statute the Interstate Commerce Commission has power to fix the "terms, conditions and limitations" for water carrier certificate holders, yet the Commission is not authorized to alter a certificate of convenience and necessity theretofore granted.

CONSIDERABLE discussion has arisen from time to time over the legal question: Are warehouse employes within the scope of the Fair Labor Standards Act? Warehousemen need not pay minimum wages specified by the Fair Labor Standards Act, to warehouse employes engaged in loading, checking and dispatching retail or intrastate deliveries to customers, receiving back incompleted retail deliveries, and handling clerical work incidental thereto. Also, employes engaged in repair and servicing of merchandise for retail customers and in handling incidental clerical work, are engaged in a local retail activity and hence are not within coverage of the Fair Labor Standards Act.

Warehouse employes must be paid minimum wages specified by the Fair Labor Standards Act, as follows: Employes who sort, pack, handle, repair, or polish merchandise received in warehouse from interstate shipments. These employes may also perform some purely intrastate work, yet they must be paid minimum wages specified by this federal law. See Montgomery, 158 Fed. Rep. (2d) 948.

Income Tax

In Allen, 157 Fed. (2d) 970, Tex., the government had compelled a stockholder in a storage corporation to pay tax on dividends from 1939 on $1,000,000 worth of stock. The higher court held that the government must refund a considerable portion of the tax, because the testimony proved that the stockholder had agreed to hold the stock jointly for his wife and himself.

Bailment

In Pure v. Petrolite, 158 Fed. Rep. (2d) 503, it was shown that a storage company leased from its owner certain equipment. The lease contract stated that the company could, before termination of the lease contract, purchase the equipment at named price under terms specified in a separate sales agreement. The parties failed to sign the separate sales agreement. Therefore, when the storage company decided to purchase the equipment the higher court held that the owner need not sell it, saying:

"We think that the right to purchase the equipment was contingent upon the entering into of a sales and purchase agreement. The parties have failed to enter into such an agreement."

Danger

If an employe is injured by a device or thing known by the employe to be dangerous, he cannot recover damages from his employer.

In Perry v. Herrin Brothers, 35 S. E. (2d) 883, N. C., it was shown that an employe sued his employer to recover damages for injuries received when he slipped and fell on a narrow platform. The higher court refused to hold the employer liable in damages, saying:

"If any dangerous conditions existed in connection with the platform, such conditions were obvious, and the plaintiff (employe) was thoroughly familiar with the situation . . ."

Thus, this court established law that where a dangerous condition or defect is known by an employe, the latter assumes the full risks connected with the employment.

Why Wirebounds Are Winners

(Continued from Page 93)

eight percent, and slashed shipping room costs by reducing the number of pieces necessary for assembling the container from 15 to nine. In addition, the wirebound box is easy to pack, easy to unpack, and it can be stacked safely. It requires a minimum of storage space before use.

Two employes now require between seven and eight minutes to pack a Homelite unit, including assembly of the container, as compared to about 15 minutes formerly. When the packing is completed, the product being shipped is protected by the solid bottom, top, and sides of the box from external damage and from dust and dirt—an important factor, since each pump, blower, or generator is factory-tested and thus contains some oil.

During the war, practically the entire output of wirebound box factories was used by the government to package munitions, food, and other war necessities. Since the end of hostilities, the wirebound industry, like other industries, has fought shortages of materials—wood and wire. But now, dissolution of material problems seems to be just ahead.

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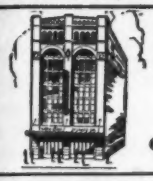

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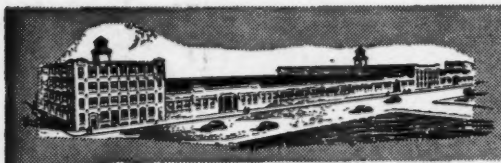

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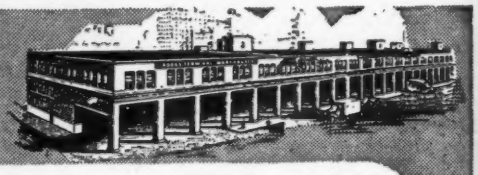

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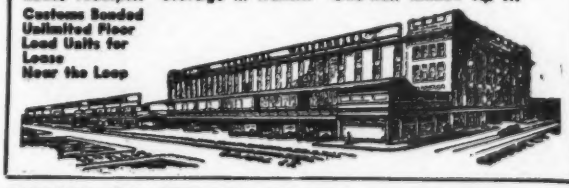

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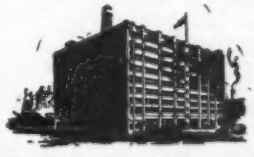

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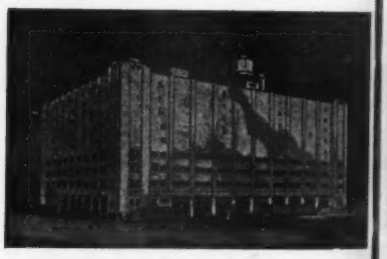

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(*Continued from Page 59*)

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Household Goods Storage, Moving & Packing
Long Distance Operators
Members: A.W.A.-A.C.W.-N.F.W.A.-S.W.T.A.-T.M.T
Agents—Allied Van Lines

BEAUMONT, TEXAS

TEXAS STORAGE COMPANY

656 NECHES STREET BEAUMONT, TEXAS
Merchandise and Household Goods
Warehouse, Concrete Construction
30,000 Sq. Ft. Distribution of Pool Cars
Transfer Household Goods
Agent for A.V.L. Member of N.F.W.A.—S.W.&T.A.

CORPUS CHRISTI, TEXAS

CORPUS CHRISTI WAREHOUSE AND STORAGE COMPANY

Located AT PORT SITE
adjacent to docks NAVIGATION DISTRICT NO. 1
Storage *Distribution* *Drayage*
MERCHANDISE EXCLUSIVELY
96,400 Sq. Ft. Sprinklered Low Insurance Rates
Member: Southwest Warehouse and Transfermen's Ass'n

CORPUS CHRISTI, TEXAS

Robinson Warehouse & Storage Co.

General Offices: 1500 N. Broadway, Corpus Christi
Specialists in
General Merchandise Storage—Pool Car Distribution
Public Bonded Warehouses at Alice, Corpus Christi, Harlingen, Laredo, McAllen and Victoria . . . Daily and overnight common carrier Motor Freight Service to Houston, San Antonio, Austin, Laredo and Rio Grande Valley, serving all intermediate points.
Export Handling: Inquiries Invited

DALLAS, TEXAS

GUS. K. WEATHERRED, *Pres.*
C. E. BRADLEY, *Vice-Pres.*

DALLAS TRANSFER AND TERMINAL WAREHOUSE CO.

ESTABLISHED 1875
2nd & 4th Units Santa Fe Building, Dallas 2, Texas
Modern Fireproof Construction—Office, Display, Manufacturers, and Warehouse Space

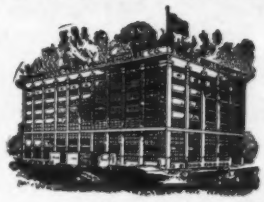
Operators of the Lone Star Package Car Company (Dallas and Fort Worth Divisions)
G. & N. T. Motor Freight Line
Agents for Allied Van Lines, Inc
MEMBERS A.W.A., N.F.W.A., American Chain of Warehouses, Southwest Warehouse & Transfermen's Assn., Rotary Club

Britain's Nationalization Bill, by G. Lloyd Wilson,

will be a feature of DA for July. Watch for it.

DALLAS, TEXAS

INTERSTATE-TRINITY WAREHOUSE COMPANY



301 North Market St., Dallas 2
Merchandise Storage and Distribution
Household Goods Storage
Moving & Packing
Long Distance Hauling
R. E. ABERNATHY, *Pres.*
J. A. METZGER, *Vice-Pres.*

Represented by ALLIED DISTRIBUTION INC.
CHICAGO 8, 1525 NEWBERRY AVE. Mon. 5531 — The Distributors' Moving Group — NEW YORK 18, 11 WEST 42ND ST. Penn. 6-0967

EL PASO, TEXAS *"Bankers of Merchandise" "Service With Security"*

International Warehouse Co., Inc.

1601 Magoffin Ave. Inc. in 1920 El Paso, Texas
Lowest Content Insurance Rate
Fireproof Storage of Household Goods, Autos & Merchandise. State and Customs Bonded. Private Trackage—T. & P. and So. Pac. Rys.
Pool Car Distribution—Motor Truck Service.
Members [illegible] *for AVL.*

Represented by CHICAGO 8, 1525 NEWBERRY AVE. Mon. 5531 — The Distributors' Moving Group — NEW YORK 18, 11 WEST 42ND ST. Penn. 6-0967

FORT WORTH, TEXAS

In Fort Worth It's Binyon-O'Keefe

MERCHANDISE STORING—POOL CAR DISTRIBUTION
Our modern Centrally located warehouse is completely equipped to serve you with over 90,000 sq. ft. of merchandise and household storage space.
MOVING—STORAGE—PACKING—SHIPPING

Since 1875 **BINYON-O'KEEFE STORAGE CO.** Since 1875
800 Calhoun St., Fort Worth 1
Associated with Distribution Service, Inc.

FORT WORTH, TEXAS

Storage, Cartage, Pool Car Distribution

O. K. Warehouse Co., Inc.

255 W. 15th St., Fort Worth 1, Tex.
Agents, North American Van Lines, Inc.

HOUSTON, TEXAS

BUFFALO WAREHOUSE COMPANY

No. 1 MAIN STREET HOUSTON 2, TEXAS
Located in the heart of the jobbing district
MERCHANDISE STORAGE—POOL CAR DISTRIBUTION
Lowest Insurance Rates Automatic Sprinkler Watchman

HOUSTON, TEXAS

Phone - CAPITOL 2584

Federal Warehouse Company

OFFICE: 915 N. SAN JACINTO ST.
All Commercial Bonded Warehouse Services
6 Warehouses on S.P., M.P., Santa Fe, Burlington-Rock Island, IGN. 45 Car Spot
Member: American Warehousemen's Ass'n, SW Whse & Trans Ass'n, & Houston Ass'n.

HOUSTON, TEXAS

Better Warehousing in HOUSTON

We operate a modern low insurance rate warehouse in the center of the wholesale, jobber, rail and truck terminal district. Most conveniently located for interior jobbers' trucks; well trained personnel; cooler space.

HOUSTON CENTRAL WAREHOUSE CO.
Commerce and San Jacinto Houston 1, Texas

Represented by CHICAGO 8, 1525 NEWBERRY AVE. Mon. 5531 — The Distributors' Moving Group — NEW YORK 18, 11 WEST 42ND ST. Penn. 6-0967

HOUSTON, TEXAS

Houston Terminal Warehouse & Cold Storage Company
701 No. SAN JACINTO ST., HOUSTON 2
General Storage Cold Storage U. S. Custom Bonded
A. D. T. Service Pool Car Distribution
Office Space Display Space Parking Space
Lowest Insurance Rate
New York Representative Phone PLaza 3-1235
Chicago Representative Phone Harrison 1496

HOUSTON, TEXAS

AT HOUSTON
Receiving . . . . .
Weighing . . . . .
Sampling . . . . .
Warehousing . .
Forwarding . .
. . . also Wharfingers offering complete Shipside Services with berthing space for eight steamers.

HOUSTON WHARF CO.
(Long Reach Docks)
OWNED AND OPERATED BY GULF ATLANTIC WAREHOUSE CO
P. O. Box 2588 Houston 1, Texas

HOUSTON, TEXAS

PATRICK TRANSFER & STORAGE CO.
1117 VINE STREET, HOUSTON 2
Merchandise and Household Goods Storage
Pool Car Distribution
Sprinklered—A.D.T. Watchmen
Shipside and Uptown Warehouses
Operators—Houston Division
Lone Star Package Car Co.
Member of N. F. W. A. — State and Local Assn's.

HOUSTON, TEXAS

W. E. FAIN, FOUNDER
W. T. FAIN, MANAGER
TEXAS WAREHOUSE COMPANY
Established 1901
Forty-four Years
Under Same Continuous Management
MERCHANDISE EXCLUSIVELY
Pool Car Distribution Sprinklered Throughout
A.D.T. Supervised Service

HOUSTON, TEXAS

UNION Transfer & Storage Co.
1113 Vine St. P.O. Box 305, Houston 1
Forwarding and Distributing
MERCHANDISE STORAGE
Warehouses Sprinklered Throughout
Supervised by A. D. T. Service.
SERVICE THAT COUNTS

HOUSTON, TEXAS

UNIVERSAL TERMINAL WAREHOUSE CO.
1002-1008 Washington Ave., Houston
Merchandise Storage — Pool Car Distribution — Drayage Service
A.D.T. Central Station Automatic Supervisory
Sprinkler, Waterflow, and Fire Alarm Service
Watchmen, U. S. Customs Bonded, Office Space
Represented in all principal cities by
UNIVERSAL CARLOADING & DISTRIBUTING COMPANY
Division of
UNITED STATES FREIGHT CO.
Members State and Local Associations

HOUSTON, TEXAS

BENJ. S. HURWITZ, *Pres.*
WESTHEIMER
Transfer and Storage Co., Inc.
2205 McKinney Ave., Houston 1
OVER 50 YEARS IN HOUSTON
Merchandise & Household Goods Storage—Pool Car Distribution—Lift Van Service—20 car lengths of trackage.
Fireproof Warehouses—A.D.T. Automatic Fire and Burglary Protection
Agents for Allied Van Lines, Inc.
Members N.F.W.A. State and Local Assn.

LUBBOCK, TEXAS

P. O. Drawer 1680.
WEST TEXAS WAREHOUSE COMPANY
Licensed and Bonded Warehouse
250,000 sq. ft. sprinklered space.
25-Car spot on Santa Fe RR.
Concrete floors, modern equipment.
Truck Loading Docks. Space for lease.
MEMBERS SOUTHWEST WAREHOUSE & TRANSFERMEN'S ASS'N

SAN ANTONIO, TEXAS

Merchandise **MERCHANTS** Household Goods
TRANSFER & STORAGE CO.
Merchants & Transfer Sts., San Antonio 6
Complete Storage and Distribution Service
Over 50 years of satisfactory service
Member of A.V.L.—N.F.W.A.—S.W.A.

SAN ANTONIO, TEXAS

Agent for Allied Van Lines, Inc.
Scobey Fireproof Storage Co.
211-220 North Medina St., San Antonio 7
HOUSEHOLD - MERCHANDISE - COLD STORAGE - CARTAGE
DISTRIBUTION
INSURANCE RATE - - - 10c
Members of 4 Leading Associations

SAN ANTONIO, TEXAS

MEMBER MAYFLOWER WAREHOUSEMEN'S ASSOCIATION
SOUTHERN TRANSFER & STORAGE CO.
P. O. BOX 4097, STA. A, SAN ANTONIO 7
Specialists in Merchandise Distribution
FIREPROOF CONSTRUCTION
BONDED STORAGE
Represented by The Distributors Van Group
CHICAGO 9 1925 NEWBERRY AVE. Phone 3131
NEW YORK 18 8 WEST 42ND ST. Penna. 6-0747

TYLER, TEXAS

IRA P. HILDEBRAND, *Owner & Manager*
HILDEBRAND WAREHOUSE COMPANY
Bonded under the Laws of Texas
General Storage and Distribution from the Center of East Texas.
Specializing in Pool Car Distribution and Merchandise Warehousing

OGDEN, UTAH

MEMBER OF A.W.A.
WESTERN GATEWAY STORAGE CO.
GENERAL WAREHOUSING
POOL CAR DISTRIBUTION
MERCHANDISE AND COLD STORAGE

SALT LAKE CITY, UTAH

CENTRAL WAREHOUSE
520 West 2nd South St., Salt Lake City 1
Fireproof *Sprinklered*
Insurance rate 18c. Merchandise Storage.
Pool Car Distribution. Office Facilities
Member A. W. A.

SALT LAKE CITY, UTAH

Merchandise Storage and Distribution
Over 1,000,000 cubic feet reenforced Concrete Sprinklered Space
Insurance Rate 11 Cents
CORNWALL WAREHOUSE CO.
353 West 2nd South St., Salt Lake City 1
Represented by
DISTRIBUTION SERVICE, INC.
New York - Chicago - San Francisco

SALT LAKE CITY, UTAH

Storage—Pool Car Distribution
KEYSER MOVING AND STORAGE CO.
328 West 2nd South, Salt Lake City 1 Est. 1910
72,000 sq. ft. space. Reinforced concrete and brick. Dignified accessible, and central location. UP. spur with free switching from or to other lines. P-U&D service rail or truck. Systematic delivery service twice daily. 90% Co-Ins. rate 19½¢ per $100.00. A.D.T. automatic burglar and fire protection. Office and dock space available.
Member AWA—UVL—UWA—AWI

SALT LAKE CITY, UTAH *"This is the Place"*

FOR BETTER SERVICE

SECURITY STORAGE & COMMISSION CO.

230 S. 4TH WEST ST., SALT LAKE CITY 1

Over 39 Years' Experience

Merchandise Warehousing - Distribution
Sprinklered Building - Complete Facilities
Lowest Insurance Cost - A.D.T. Watchman Service
Office Accommodations - Display Space

Represented by American Chain of Warehouses, Inc.
New York (17) 250 Park Ave. — Chicago (4) 53 W. Jackson Blvd.

MEMBER: A.W.A.—U.W.A.

NORFOLK, VA.

Household • Automobile Storage • Merchandise

NEW-BELL STORAGE CORPORATION

22nd St. & Monticello Ave.
NORFOLK 10, VIRGINIA
MODERN SPRINKLER EQUIPPED WAREHOUSE
50,000 SQUARE FEET PRIVATE RAIL SIDING
Lowest Insurance Rate in Norfolk. Pool Car Distribution
WE SPECIALIZE IN MERCHANDISE STORAGE AND DISTRIBUTION
AGENTS AERO MAYFLOWER TRANSIT COMPANY
Member M.W.A. & A.T.A.

NORFOLK, VA.

STORE and DISTRIBUTE
IN THE PROSPEROUS TIDEWATER AREA THRU PRUDENTIAL

HOUSEHOLD GOODS MOVED, PACKED, SHIPPED
POOL CAR TRANSFER TRUCKING SERVICE
LARGE FIREPROOF WAREHOUSE
OPEN YARD STORAGE AVAILABLE
LOCATED ON N. & W. SIDING

PRUDENTIAL STORAGE and WAREHOUSE COMPANY

Billings St. at N. & W. Ry.
P. O. Drawer 1859 — Telephone 22481 or 54008

NORFOLK, VA. *Fine Warehousing Since 1914*

Security Storage and Van Co.

500-530 FRONT STREET
COLLECTIONS • POOL CARS • DISTRIBUTION
MOTOR VAN AND LIFT VAN SERVICE
Member—Nat'l. F.W.A.—Allied Van Lines

NORFOLK, VA. Established 1892

SOUTHGATE STORAGE COMPANY, Inc.

239 Tazewell St., Norfolk 10

MEMBER: A.C.W. A.W.A. S.W.A. U.S.C. of C.

For economical storage and distribution you will want to know more about our individualized services. Our fireproof warehouses are in the Southgate Terminal, on the waterfront and in the center of Norfolk's wholesale district. Served by all rail, water and motor lines.

***Write for Booklet*—"7 POINT DISTRIBUTION"**

RICHMOND, VA. 69 Years of Uninterrupted and Expert Service

BROOKS TRANSFER and STORAGE CO., Inc.

1224 W. Broad Street, Richmond 3, Va.

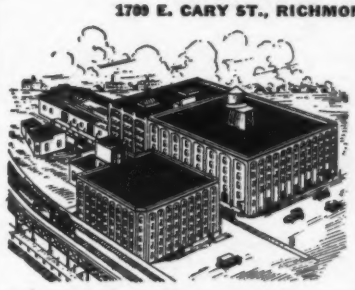
Three Fireproof Storage Warehouses—810,000 Cubic Feet Floor Space—Automatic Sprinkler System—Low Insurance Rates—Careful Attention to Storage—Packing and Shipping of Household Goods—Private Railroad Siding—Pool Car Distribution—Motor Van Service to All States—Freight Truck Line.

Member of N. F. W. A. — A. T. A.

RICHMOND, VA. *Established 1908*

VIRGINIA BONDED WAREHOUSE CORPORATION

1709 E. CARY ST., RICHMOND 3, VA.



160,000 SQ. FT. SPACE
BUILDINGS SPRINKLERED
U. S. BONDED & PUBLIC WAREHOUSES
MERCHANDISE STORAGE & DISTRIBUTION
INSURANCE RATES 20c PER $100 PER YEAR

ROANOKE, VA.

H. L. LAWSON & SON

Finance and Storage
Pool Car Distributors
General Merchandise Storage

421-25 EAST CAMPBELL AVE.
ROANOKE 7, VIRGINIA

ROANOKE, VA.

ROANOKE PUBLIC WAREHOUSE

369 W. Salem Ave., W., Roanoke 5

Capacity 500 Cars — Automatic Sprinkler
Private Railroad Siding — Accurate Accounting

We make a Specialty of Storage and Pool Car Distribution for Agents, Brokers and General Merchandise Houses.
Member of American Chain of Warehouses

SEATTLE, WASH.

EYRES TRANSFER & WAREHOUSE CO.

2203 First Ave., So., Seattle 4

Cartage — Distribution — Storage

Highest financial rating; new fireproof; A.D.T. sprinklered buildings; lowest insurance rate (10.2c); modern equipment.

SEATTLE, WASH. J. R. GOODFELLOW, *Pres.*

OLYMPIC WAREHOUSE & COLD STORAGE CO.

MERCHANDISE STORAGE & DISTRIBUTION

1203 Western Avenue — Seattle 1, Wash.

Cold Storage — Dry Storage — Rentals — Pool Car Distribution — Office Rentals
Fireproof, brick const.; Sprinkler system; Insurance rate: 12.8c. Siding connects with all rail lines.

Bonded U. S. Customs: State License No. 1
Member of A.W.A. (C.S.) Wash. State Whsmn. Assn.

SEATTLE, WASH. Seattle's One-Stop Warehousing Service!

UNITED CULBERTSON

Merchandise Storage & Distribution — Formerly Inherited
U.S. Customs—Bonded Stores — Seattle's Exclusive Furniture Repository

SEATTLE TERMINALS, Inc.

Executive Offices: 1017 E. 40th St., Seattle 5

R. G. Culbertson, President — Wm. T. Laube, Jr., Secretary

DA for July will present various ways in which materials handling is, and can be, used as a tool for efficient and economical distribution

Improved Handling

(*Continued from Page* 73)

taken care of without the need of additional help and the operation was done more safely and conveniently. The total cost of the installation was approximately five hundred dollars and the estimated annual saving on one commodity was equivalent to cost of three men over a six-month period or approximately eight hundred dollars in direct labor costs. In addition, the equipment is available for further use in subsequent operations of this type and also for other loading and unloading operations.

Similar savings can be made with practically all types of materials handling equipment. So much has been written and said about palletizing and the use of fork trucks that there is no need of going into detail regarding the economies this versatile equipment can effect in shipping departments.

The use of mechanical devices will permit the handling of heavier loads before and after packaging. Where materials can be handled and stacked in consolidation areas after they have been packaged and marked much of the confusion incident to the loading of shippers' trucks can be climinated. Frequently, proper methods are just as important as proper equipment. Good housekeeping is absolutely essential. Since shipping departments generally are at the end of the production line they too often are at the end of management's thinking.

MADISON, WIS.

LOW INSURANCE RATE

CENTRAL
STORAGE AND WAREHOUSE COMPANY

COLD STORAGE
DRY STORAGE
FREEZER STORAGE

612 W. Main St., Madison 3

MILWAUKEE, WIS.

Service Minded

"Store American" For Economical Efficient Experienced Complete Merchandise Warehousing

SPECIALISTS IN POOL CAR DISTRIBUTION

AMERICAN WAREHOUSE CO.

General Office 525 East Chicago St. | Milw. Whse. Ass'n | Wis. Whse. Ass'n | *House No. 2* 302 North Jackson St.

Private Siding—Chicago & North Western Ry. 3rd Ward District

MILWAUKEE, WIS.

MILWAUKEE'S *only* COMPLETELY PALLETIZED WAREHOUSE

• Over 1½ Million Cubic Feet First Floor Space •

ATLAS STORAGE

DIVISION OF P&V-ATLAS INDUSTRIAL CENTER INC.

647 W. VIRGINIA ST. MILWAUKEE 1, WIS.

HANSEN STORAGE CO.

136 N. JEFFERSON ST., MILWAUKEE 2, WISCONSIN

Wisconsin's Largest Warehouse

STORAGE SPACE
POOL CAR DISTRIBUTION
CUSTOMS BONDED SPACE
BOAT DOCKAGE
STEVEDORING
MOTOR TRUCK SERVICE

Since 1904 we have served the Jobbing Trade.

Representatives:

AMERICAN CHAIN OF WAREHOUSES
Chicago: Tel. Harrison 1496 • New York: Tel. Plaza 1234
INTERLAKE TERMINALS, INCORPORATED
New York.....Tel. Murray Hill 5-8397

MILWAUKEE, WIS.

LINCOLN
FIREPROOF WAREHOUSE CO.

MERCHANDISE WAREHOUSING AND DISTRIBUTION

LOCATED IN HEART OF BUSINESS DISTRICT

Offices: 206 W. Highland Ave., Milwaukee 3

Member of A.W.A.—W.W.A.—M.W.A.

MILWAUKEE, WIS.

NATIONAL TERMINALS CORPORATION

954 So. Water Street, Milwaukee 4 Tel. Mitchell 5644

Milwaukee's most modern and best located Waterfront Warehouse. Automobile storage. Warehousing on unit basis for spot stocks. Storage "in transit". Pool car distribution. Customs Bonded.
Member of A. W. A. & W. W. A.

New York Office: 122 E. 42nd St., Phone Murray Hill 5-5960, New York 17, N. Y

MILWAUKEE, WIS.

"Milwaukee's Finest"

National Warehouse Corporation

— STATE BONDED —

EVERY CONCEIVABLE WAREHOUSE & DISTRIBUTION SERVICE AFFORDED

Fides et Fidelis
ASSOCIATED WAREHOUSES INCORPORATED

A.D.T. Service

468 E. Bruce St.
Milwaukee 4

C. & N.W.R.R. Siding

MILWAUKEE, WIS.

—Phone Marquette 7091

TERMINAL STORAGE CO.

100-112 W. Seeboth St.
Milwaukee 4, Wisconsin

Cooler, Freezer and General Merchandising Storage
Deep Water Dock, Private Siding
on C.M.St.P. & P. R.R.

SHEBOYGAN, WIS.

MEMBER MAYFLOWER WAREHOUSEMEN'S ASSOCIATION

SHEBOYGAN
WAREHOUSE & FORWARDING CO.

A Merchants & Manufacturers Warehouse

11th and Illinois Ave. Sheboygan, Wis.

Member of A.W.A.—May. W.A.—Wis. W.A.

CANADA

TORONTO, ONT.

M. A. RAWLINSON, *Pres. & Gen. Mgr.*

M. RAWLINSON, Ltd.

Established 1885 610 Yonge St., Toronto 5, Can.

Seven Buildings to Meet All Requirements for Modern Storage and Distribution

Customs Bonded. Pool Car Distribution. Household Goods Moved, Packed, Shipped and Stored.

Members of CanWA—NFWA—BAIFR—FWRA—TC&W—ALLIED VAN LINES

MONTREAL, QUE.

ST. LAWRENCE WAREHOUSE INC.

5-VAN HORNE AVENUE, MONTREAL, CANADA

200,000 SQ. FT. OF MODERN FIREPROOF SPACE LOCATED IN THE EXACT CENTER OF THE CITY OF MONTREAL

Canadian Customs Bond. Private Siding—8 Car Capacity—Free Switching—All Railroad Connections

New York Representative: Frank J. Tully
277 Broadway, New York 7 Phone Worth 2-0428

MONTREAL, QUEBEC

Established 1908
W. G. KENWOOD,
Pres. & Man. Dir.

Westmount Transfer & Storage Ltd

205 Olivier Ave., Westmount, P. Q.

LOCAL AND LONG DISTANCE MOVERS

Private Room System for Storage

CRATING, PACKING and SHIPPING

Charges Collected and Promptly Remitted

Member: N. F. W. A., Can. W. A.

CANADIAN WAREHOUSEMEN'S ASSOCIATION CWA OFFICIAL SEAL

Index to General Advertisers

Public warehouse advertisements start on page 98 and are arranged alphabetically by states, cities and firms.

We've been told:

"You make Electric Trucks Too good!"

Some people say, when they first see the rugged chassis and construction details of electric industrial trucks: "But you make them *too* strong! Why not build them lighter and cut the price?"

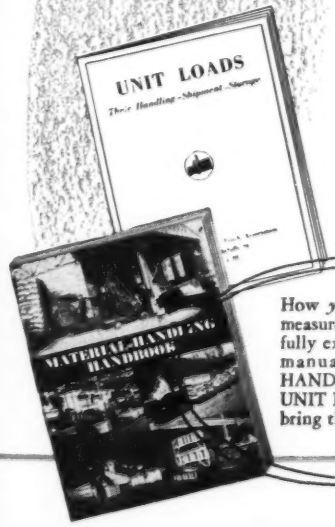
Significantly, that suggestion rarely comes from *users* who have tried less sturdy equipment and *who know its over-all operating costs.*

These experienced owners know the fallacy of cheaper equipment. They have told of price-tag "savings" quickly eaten up by inflated maintenance costs—or by losses arising from delayed operations. They have struggled against repeated interruptions in material flow caused by sending "a boy to do a man's job."

That, in short, is why the electric truck industry continues to build battery-powered trucks "*too* good."

We feel that this policy has much to do with the fact that over 90 percent of the electric industrial trucks sold in the past twenty years to over 300 branches of industry and distribution are still in constant service.

Such would not be the case, we are sure, if high quality construction did not result in the *lowest over-all cost per ton of material handled.*



How *you* may assure economy, measured by that standard, is fully explained in two practical manuals: the MATERIAL-HANDLING HANDBOOK and UNIT LOADS. Your letter will bring them without charge.

ELECTRIC INDUSTRIAL TRUCK ASSOCIATION

208-D South La Salle Street, Chicago 4, Illinois

Production

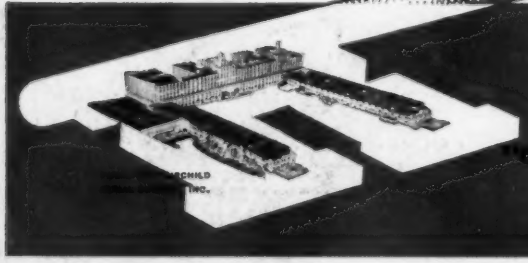
alone is not enough

THERE'S LITTLE POINT to record output without prompt distributional follow-through. The Port of New York is geared to the vast industrial potential of the area . . . with Harborside in the key spot to best serve your shipping and storage needs.

Harborside is America's greatest rail-water terminal. It has direct connections with the Pennsylvania Railroad, and with all other lines, via lighterage; 36-car placement. Piers for working eight large deep-water freighters at one time.

Under one roof there are more than 27,000,000 cu. ft. of dry- and cold-storage, manufacturing, and office space. An expert staff, using ultra-modern equipment, handles your merchandise as carefully as you would do the job yourself . . . swiftly, safely, economically. Modern, fire-proof construction and a sprinkler system assure low insurance rates.

Harborside is located directly opposite Cortlandt Street, Manhattan . . . five minutes from Holland Tunnel and trunk highways, 20 minutes from 33rd Street, New York. Availabilities being limited, it will help you to arrange for our facilities as much ahead of need as possible.



HARBORSIDE

"Gateway to the World"

WAREHOUSE COMPANY, INC. • 34 EXCHANGE PLACE, JERSEY CITY